

ACATS standard would erect.⁴² Nevertheless, proponents of the ACATS standard claim that it is the most computer-compatible standard in the world.⁴³ This is analogous to saying that American cigarettes are the safest in the world. If the ACATS standard were in fact computer-compatible, the computer and software industries would not be devoting substantial time and resources to challenging the standard. But regardless of how the ACATS standard compares to the rest of the world's digital television standards, it is plainly unsatisfactory for digital convergence and growth of the National Information Infrastructure *in this country*.

If the ACATS standard *is* the most computer-compatible standard in the world, it has earned this "honor" only because the sole rival DTV standard ACATS proponents seem to recognize is the European Digital Video Broadcast ("DVB") standard, which incorporates *only* interlaced scanning and non-square pixels, and which lacks even the few computer-compatible elements that are included in the ACATS standard.⁴⁴

And though the ACATS standard includes computer-compatible elements (such as progressive scanning) in *some* formats, the presence of computer-*incompatible* elements (such as interlaced scanning) in others will necessarily

⁴² CICATS Comments at 16-24, 35-37, Exhibits A and B; Microsoft Comments, *supra*, note 5, at 6-9; Compaq Comments, *supra*, note 5, at 14-19, 21-22.

⁴³ Grand Alliance Comments at 16, 25; ATSC Comments at 17, 26; Zenith Comments at 10-11; Phillips Comments at 15; Thomson Comments at 10-12.

⁴⁴ Zenith claims that the ACATS standard is "the *only* digital television development effort in the world that stresses progressive scan and square pixels." Zenith Comments at 10 (emphasis in original).

increase cost of receiving equipment (including computers, receivers, and set-top converters), which will need to convert any computer-incompatible element to apply computer applications to material containing that element. The fact that the standard may "stress" certain computer-compatible components over their computer-incompatible counterparts does not lower the cost of computer interactivity one iota, as long as *any* computer-hostile components remain in the standard.

As explained in greater detail below, the most serious obstacle to computer compatibility with DTV is the presence of interlaced scanning formats in the ACATS standard

B. There Is No Rational Justification for the Inclusion Of Interlaced Scanning.

Most -- but not all -- proponents of the ACATS standard have gone to extremes in a futile effort to justify the inclusion of interlaced scanning in the standard.⁴⁵ None of their arguments is new, and each has been refuted in the earlier submissions of CICATS⁴⁶ and others, most notably the Massachusetts Institute of Technology ("MIT") professors who were closely involved in development of the ACATS standard.⁴⁷

⁴⁵ *E.g.*, Grand Alliance Comments at 19-24; ATSC Comments at 19-24; Thomson Comments at 10-12; Sony Comments at 14-25; Zenith Comments at 10-11.

⁴⁶ CICATS Comments at 19-25 & Exhibit A thereto.

⁴⁷ *E.g.*, Comments of William R. Schreiber (filed June 24, 1996) ("Schreiber Comments"); Informal Reply Comments of William R. Schreiber on Fourth Further NPRM (submitted March 8, 1996) ("Schreiber Reply Comments"); Comments of V. Michael Bove, Jr., Lee W. McKnight, Nicholas Negroponte, Andrew Lippman, and Suzanne Chambliss Neil (filed June 21, 1996) ("MIT Joint Comments"); Comments of Lee P. McKnight and Joseph P. Bailey (filed July 11, 1996)

Professor Schreiber, for example, has written "[T]here is not a single compelling reason to use interlaced transmission formats in any new television system, and there are many reasons why this is a bad idea."⁴⁸

Others from MIT, urging the elimination of interlaced scanning, have cautioned:⁴⁹

Failure to streamline the Grand Alliance standard by eliminating the costly and unnecessary interlaced formats will cost consumers billions of dollars. Interlace may cause even more harm than we forecast: it may in fact doom the whole enterprise to failure:

* Japan introduced an interlaced HDTV system which failed in the marketplace.

* Europe introduced an interlaced HDTV system which failed in the marketplace.

* There is no reason to believe that the Grand Alliance standard will not meet a similar fate -- unless it is improved by eliminating interlace.

These commenters have emphasized that the inclusion of interlaced scanning would not only raise consumer costs significantly and unnecessarily, but would create serious obstacles to critical interoperability of DTV with computers and other devices.⁵⁰

("McKnight/Bailey Comments"); Comments of MIT Research Program on Communications Policy (filed July 12, 1996); Comments of Branko J. Gerovac (filed July 12, 1996).

⁴⁸ Schreiber Reply Comments, *supra*, note 47, at 4 (emphasis in original).

⁴⁹ McKnight/Bailey Comments, *supra*, note 47, at 2.

⁵⁰ *Id.* at 2-3 (emphasis in original).

[W]e are convinced that consumers as well as producers will benefit . . . from the greater interoperability of a progressive scan digital television standard

Based on our prior work on consumer preferences, as well as an engineering cost model developed at MIT and described in the attached paper⁵¹] and the more comprehensive thesis on which it draws, we conclude that:

- * Interoperable (*i.e.*, progressive scan) digital television sets, VCRs, and camcorders will be less expensive if they do not have to be capable of receiving or originating both progressive scan and interlaced formats of digital television.
- * Interoperable digital television sets will be more useful to consumers.
- * Interoperable digital television production and broadcast equipment including high resolution cameras will also be less expensive and more useful.
- * Other markets, such as those for multimedia personal computers and workstations, or cable television head-end equipment, will also benefit as more useful products and services help create new applications of digital television technology.

The FCC should adopt a streamlined version of the Grand Alliance standard, to reduce costs and increase the benefits of digital television for consumers. Failure to simplify the standard by eliminating the unnecessary complexity of interlace will cost consumers billions of dollars.

Even Jae Lim, apparently the *only* MIT academic involved in the development of the ACATS standard who has not publicly disavowed the

⁵¹ McKnight, L., J. Bailey, and B. Jacobson, "Modeling the Economics of Interoperability: Standards for Digital Television," *Revue D'Economie Industrielle*, No. 75, Trimester 1, 1996 (attached to McKnight/Bailey Comments).

standard, has endorsed the standard *only if the standard's SDTV formats eliminate interlaced scanning and non-square pixel spacing,*⁵² both of which CICATS strongly urges.⁵³

the ACATS' PS/WP4, which is the ACATS' working party on Alternative Media Technology and Broadcast Interface, concluded that [t]ransmission of the signal in progressive format is the third most important characteristic that contributes significantly to interoperability, scope of services and features, and extensibility. The first two most important characteristics cited are an all-digital implementation based on a layered architecture model, and universal headers and descriptors. Transmission of the signal in progressive format was cited to be more important than the use of a flexible packet data transport structure, the fourth important characteristic.

This is not the first time Professor Lim has argued against including interlaced scanning in the DTV standard. Three years ago, he said that the extra cost of including both interlaced and progressive scanning was unnecessary, and that "[t]he real issue is the cost at the receivers, because there will be millions of them. If there were any benefit to [keeping both formats], I would not see a problem, but I don't see any benefit."⁵⁴ He explained that interlaced was included in the standard because broadcasters "are just afraid of change" and because European manufacturers had made large investments in interlaced.⁵⁵

⁵² Letter from Jae S. Lim to Hon. Reed E. Hundt (July 8, 1996) ("Lim Letter") at 1.

⁵³ *Id.*

⁵⁴ "MIT Opposes Compromise; HDTV Transition From Interlaced to Progressive to Raise Costs," *Communications Daily*, May 26, 1993, ("MIT Opposes Compromise") at 2.

⁵⁵ *Id.*

Professor Lim Robert Rast (senior executive of General Instrument), and Jerry Pearlman (former Chairman of Zenith), have all publicly acknowledged that inclusion of both interlaced and progressive scanning in the DTV standard would increase receiver costs by ten percent.⁵⁶ In contrast, Mr. Rast has said that broadcast transmitters “can handle both [interlaced and progressive transmissions] with no additional cost.”⁵⁷ Professor Lim has said that including both formats would add to the technical difficulty of manufacturing DTV sets, and Mr. Rast has predicted that HDTV sets will include interlaced scanning for some 15 years.⁵⁸

Even Sony Electronics, one of the staunchest defenders of interlaced scanning, has admitted that “[p]rogressive scanning is technically better.”⁵⁹ Although it suggests using de-interlacers in receivers to address the problems interlaced scanning creates, Sony’s description of that solution is at best half-hearted, and betrays the failings of receiver de-interlacing:⁶⁰

[V]irtually everything technically related to the television process is imperfect Given all the latent imperfections of the total system, this de-interlacing process acquires a proper perspective -- it is a practical solution to solve *most* of the problems.

⁵⁶ *Id.*; “Alliance Settles on Multiformat HDTV,” *Television Digest*, May 31, 1993, at 1.

⁵⁷ MIT Opposes Compromise, at 2.

⁵⁸ *Id.*; Jon Van, “Rival HDTV Plans to Be Channeled Into 1 Joint Effort May Add to Cost of Sets,” *Chicago Tribune*, May 25, 1993, at Business Section, p. 1.

⁵⁹ Sony Comments at 15.

⁶⁰ *Id.* at 23 (emphasis added).

The question Sony does not answer -- but the Commission must -- is why the American public should be forced to accept a second-rate, imperfect "fix" to a serious problem that can easily be avoided

True, it is possible to de-interlace a broadcast signal for display on a progressive-scan device such as a PC monitor, but the cost of de-interlacing needlessly inflates equipment costs⁶¹ and degrades picture quality, as even Sony admits.⁶² By creating these competitive disadvantages for progressive-scan display devices, Sony's de-interlacing "solution" would effectively keep PC's out of the television market while Sony attempts to enter the PC market.

And Sony has another interest in preserving interlaced scanning. Its Comments repeatedly refer to Sony's "major investment in time (almost 15 years) and resources grappling with the difficult technical challenges associated with HDTV."⁶³ One product of Sony's investment is its interlaced high-resolution television camera, until recently, the only camera capable of producing a high-quality HDTV picture.⁶⁴ If the U.S. DTV standard does not support antiquated interlaced scanning, Sony's interlaced HDTV camera would have no market here, particularly after the recent unveiling by Polaroid, MIT, and others of a progressive-scan camera that produces higher quality HDTV pictures than

⁶¹ See *supra* page 24 (members of Grand Alliance admit that accommodating both interlaced and progressive scanning inflates consumer equipment costs by 10%).

⁶² See Sony Comments at 22-23.

⁶³ *Id.* at 13.

⁶⁴ *Id.* at 5-6, 16-18, 25.

Sony's interlaced camera⁶⁵ This competitive threat undoubtedly explains Sony's vehement defense of interlaced scanning for DTV

Sony's proprietary interest in preserving interlaced scanning is not unique. As noted above, interlaced scanning was included in the ACATS standard partially because of European equipment manufacturers' investments in the technology.⁶⁶ This explanation is corroborated by a recent press report⁶⁷ that

TV manufacturers, who also make the camera equipment used by broadcasters, had a disincentive for embracing the newer technology [*i.e.*, progressive scanning]. They hold most of the patents on interlace technology, which gives them a competitive edge.

So, when the broadcasters and manufacturers were helping the government craft new rules in recent years, they maintained that the industry needed to stick with interlace as an interim step. Sure, they said, in the long run TV would make the transition to a progressive system, but not for 20 or 30 years.

Such considerations are wholly inadequate -- and inappropriate -- to justify the immense costs to the American public and American industries, such as computers and software, of including any interlaced scanning formats in the DTV standard.

⁶⁵ See Schreiber Comments at 1. Following the recent commercial availability of Polaroid's camera, priced at around \$500,000, Sony apparently slashed the price of its competing camera from \$500,000 to \$250,000. See Jim McTague, "Couch-Potato War," *Barron's*, July 15, 1996 ("McTague") at 29, 31

⁶⁶ See *supra*, note 55

⁶⁷ McTague, *supra*, note 65, at 30.

C. Other Myths

Although the most glaring and consequential inaccuracies propagated by proponents of the ACATS standard are those concerning computer compatibility and interlaced scanning, other inaccuracies exist that must be addressed.

1. **There is Very Little Evidence that Consumers Will Be Willing to Pay the Premium for HDTV.**

Although proponents of the ACATS standard maintain that consumers want the ACATS standard's highest resolution HDTV formats and are willing to pay the substantial premiums for them, they have offered virtually no reliable substantiation for this pivotal claim.

On the contrary, according to Thomson, the most consumers have ever indicated they would pay to convert their *primary* NTSC TV to a *full HDTV set* is \$1200 above the cost of their primary NTSC set⁶⁸. Thus, even accepting the reliability of Thomson's finding, most consumers will be unwilling to pay the premium that will initially be required to replace their *primary* TV with an HDTV set until prices come down. They will probably be even more reluctant to pay the comparable premium for lower-resolution sets able to receive, but not display, HDTV programs. And yet they will be forced to, if the ACATS standard is adopted; otherwise, they will be unable to receive HDTV programs.

Claims of consumer demand for HDTV are also flatly contradicted by earlier submissions by the Grand Alliance and Hitachi, which suggest that the

⁶⁸ Grand Alliance Reply Comments at 6, note 5.

high price of HDTV will deter consumers from purchasing HDTV sets unless consumers are "encouraged" to buy such sets by a Commission mandate that broadcasters transmit a minimum amount (at least 25 hours) of HDTV programming each week -- primarily during prime time or afternoons.⁶⁹

Other observers have noted the likelihood of consumer reluctance to invest in HDTV:⁷⁰

Is there market PULL [for HDTV] or is this another case of technology PUSH? There is little evidence that the American consumer is seeking improved picture quality. On the contrary, the phenomenal success of the video tape rental business indicates that the consumer will accept less picture quality given access to a wider variety of programming that he can watch at the time of his choice. Also, I suspect that the reason 60% of Americans subscribe to Cable TV [sic] is not for the improved picture quality it offers, but rather for the wider choice of programming. The slow but steady decline in network viewing supports the thesis that the viewer values a wide choice of programming . . .

[T]here is hope that, as we move toward the introduction of HDTV, the trend to larger screens, where the benefits of HDTV can be most fully appreciated, will turn what today appears to be mostly a technology PUSH into real market PULL.

If consumers *do* in fact want HDTV, they can get it for less than with the ACATS proposal, and without the problems of interlaced scanning. A 720-line progressive-scan HDTV picture has been demonstrated to be superior to a

⁶⁹ See CICATS Comments at 39-41 & nn. 95, 96

⁷⁰ Bernard J. Lechner, "HDTV Status and Prospects." Society for Information Display (Seminar F-3) ("HDTV Prospects").

1080-line interlaced picture -- the best ACATS has to offer -- and much less costly.⁷¹

But it remains doubtful that, if given a choice -- as the CICATS base-line proposal provides -- consumers would decide that the minimal advantages of HDTV over SDTV justify the huge difference in cost. Even advocates of the ACATS standard admit that, with digital SDTV

[t]he performance goes beyond the fundamental limitations of the NTSC system and produces overall picture quality that exceeds the best that can be done with NTSC. Since . . . the 16:9 wide aspect ratio can be supported and since digital surround sound audio is included, the only improvement of HDTV that is missing is the factor-of-two increase in resolution which can only be appreciated with really large screens. And the display cost and brightness penalties that go with an HDTV display are not present.^[72]

Perhaps because of the foreseeable consumer reluctance to pay extra for HDTV, it has been predicted that "the implementation of HDTV and the sale of HDTV receivers between now and the year 2000 will be a slow process."⁷³

If the ACATS standard's proponents are confident that consumers want their product, including its HDTV formats, the claimed need to provide "certainty" through a mandated standard evaporates. The Commission should let the free

⁷¹ Schreiber Comments at 3, 5-6.

⁷² HDTV Prospects at F-3/31 - F-3/32.

⁷³ *Id.* at F-3/32.

marketplace test ACATS's proponents' demand predictions rather than forcing consumers to buy HDTV-capable sets by adopting the ACATS standard.

2. Adoption of the ACATS Standard Would Not Be in The Best Long-Term Interests of Broadcasters.

As noted in Section II above, broadcaster support for the ACATS standard has often been measured at best.⁷⁴ Moreover, expressions of broadcaster support for the ACATS standard seem to have less to do with the standard itself than with broadcasters' desires to acquire more spectrum to remain competitive with other video delivery media.⁷⁵

During the early 1980's, except for their engineering departments, the U.S. terrestrial broadcasters showed little interest in HDTV. After all, it would require a huge investment in new facilities and was not likely to produce a significant increase in audience. However, by late 1986, two developments shook the broadcasters into action. The growth of the video tape rental business and the increasing penetration of Cable TV [sic] had begun to erode terrestrial broadcast audience share, and the FCC was about to allow further sharing of the UHF television spectrum with land mobile radio services. Fearing that Cable TV or pre-recorded video might suddenly offer HDTV picture quality, and that they might lose precisely the spectrum they needed to compete by broadcasting HDTV terrestrially, the broadcasters took action . . . [and] petitioned the FCC to institute a rule-making to provide for a terrestrial HDTV broadcast service

⁷⁴ See *supra* pages 17-18.

⁷⁵ HDTV Prospects, *supra*, note 70, at F-3/10 - F-3/11.

Broadcasters themselves have confirmed that their primary motive in supporting DTV is to preserve their market share in the face of stiff competition from alternative video delivery sources:

The driving force behind the transition to ATV is the need to deliver television programming that viewers want and will watch and that is competitive with other media offerings. Broadcasters will respond to the needs of the viewers and to all competitive challenges, if they have the latitude to do so.⁷⁶

Ironically, adoption of the costly, cumbersome ACATS standard could well result in a faster loss of broadcasters' audiences to other media (not burdened by the costs and complexity of the ACATS standard) than would occur if no DTV standard or a more streamlined DTV standard were adopted.

Broadcasters seem to recognize that risk, and are resisting any requirement that they transmit a prescribed amount of costly HDTV programming. They have argued that "[n]either the quality level nor the content of the ATV signal should be regulated."⁷⁷

As one observer has reported,⁷⁸

⁷⁶ NAB Comments at 1-2. See Chris McConnell, "Broadcasters Ready for Digital Switch," *Broadcasting & Cable* (April 22, 1996) at 10 ("NBC President Bob Wright said broadcasters will need the digital technology to compete with DBS, cable and telephone companies. And [Rick] Jordan [of WBOC(TV)] maintained that broadcasters cannot allow competitors to deliver what he termed a better product to viewers.")

⁷⁷ NAB Comments at 2. It was recently reported that some "broadcasters have talked of petitioning to opt out of HDTV -- just as soon as the FCC has delivered the free licenses to their safe-deposit boxes." Thomas W. Hazlett, "Industrial Policy for Couch Potatoes," *The Wall Street Journal* (August 7, 1996) ("Hazlett") at A12.

⁷⁸ HDTV Prospects *supra*, note 70, at F-3/28.

[broadcasters] stated that the transmission of multiple SDTV programs at certain times and the provision of other non-television digital broadcast services should be allowed, at least during the early years when there are few, if any, HDTV, receivers in use by the public. Without SDTV and other digital services, broadcasters said that they would not be able to justify the high capital investment required to put a digital television station on the air

Broadcasters have expressed uncertainty about the public's acceptance of HDTV under the ACATS standard, stating that "the ultimate value of HDTV to consumers is not known," and admitting that there is "little evidence supporting its likely attraction [to consumers]."⁷⁹ Stanley S. Hubbard, described as the "head of that leading broadcasting family," has reportedly complained that "[w]e're just being suckered into this new technology. . . . After all these years, how many HDTV sets are there in Japan? One hundred thousand."⁸⁰

Broadcasters also worry about the significant costs they will bear for equipment upgrades and dual operations during the transition from analog to digital,⁸¹ particularly since they do not expect to increase their audience share or advertising revenues by transitioning to DTV or even HDTV.⁸²

⁷⁹ NAB Comments, *supra*, note 4 at 2.

⁸⁰ Hazlett, *supra*, note 77 (quoting an unidentified article in a March, 1996, issue of *Broadcasting & Cable*).

⁸¹ NAB Comments at 6; Broadcasters' Comments on the Fifth Further NPRM (filed July 11, 1996) ("Broadcasters' Comments") at 18.

⁸² Written Testimony of William F. Sullivan, President and General Manager, KPAX-TV, Missoula, Montana, before the Senate Committee on Commerce, Science, and Transportation (June 20, 1996). See also Broadcasters' Comments at 17-18; Written Statement of Steven Rattner, Lazard Freres, to the FCC for *en banc* hearing (December 12, 1995) at 2; Written Statement of Ralph Gabbard, NAB, to the FCC for *en banc* hearing (December 12, 1995) ("Gabbard Statement") at 12-13.

[The FCC has] recognized that constructing digital television stations will be a very risky proposition because there can be no certainty that consumers will quickly adopt the new technology, while stations will have to be able to immediately absorb the cost of new digital equipment and the cost of operating two side-by-side stations. Moreover, there will also be no immediate reward for conversion; stations will not be able to charge advertisers any more for running their ads in both analog and digital formats.

Robert Wright, the President and CEO of NBC, has echoed these sentiments:⁸³

Today there is not a single home equipped with a digital TV or converter box capable of receiving a digital broadcast signal. Consumers will have to buy millions of digital sets or boxes before there is any chance broadcasters will see a return on the millions they have to invest in digital facilities. In addition, while broadcasters' costs will multiply, the number of viewers in each market won't. The size of the advertising pie won't be larger. And the competition we face now will increase as new digital cable and telco services enter the market.

Owners of smaller stations have questioned whether they will even be able to afford the transition.⁸⁴

Every television station in America will soon spend between \$8 million and \$10 million to completely convert its operations to digital. This means a second transmitter, perhaps a new tower for most of us. It means new cameras, editing and switching equipment, and much, much more. The impact of that conversion cost alone on stations like mine in rural Montana is going to be massive.

⁸³ Written Testimony of Robert C. Wright before the Committee on Commerce, Science, and Transportation, U.S. Senate (June 20, 1996) at 13.

⁸⁴ Oral Testimony of William F. Sullivan, President and General Manager, KPAX-TV, Missoula, Montana, before the Senate Committee on Commerce, Science, and Transportation (June 20, 1996), Tr. 56; see Gabbard Statement, *supra*, note 82, at 12-13.

Because of the uncertainty created by the potential HDTV “blackout” problem in ACATS receivers, broadcasters have argued that all receivers should be required to decode all of the standard’s formats; absent such a requirement, broadcasters will not know whether all potential viewers are capable of receiving HDTV programs.⁸⁵

In short, the potential costs to broadcasters of transitioning to DTV are substantial, and the potential rewards are uncertain. Commissioner James Quello, a former broadcaster, has stated⁸⁶

As a broadcaster, I’d see myself faced with years of simulcasting, without any income coming from it. The big ones can handle it. For the small ones, HDTV will cost them \$10 million to \$12 million up front, and they’re not making that kind of money.

One thing, and one thing alone, is virtually certain: Adoption of a DTV transmission standard at this time could significantly enrich broadcasters by providing a reason to allocate an additional 6 MHz channel to each of them, as long as they are not forced to use the channels to provide HDTV or other services with high costs and low anticipated returns. The value of the spectrum at stake in this proceeding can not be overstated,⁸⁷ and it appears that the principal value broadcasters place in the new channels is the possibility of using them to provide subscription and other new services, not free digital

⁸⁵ Broadcasters’ Comments at 32-33.

⁸⁶ McTague, at 31

⁸⁷ McTague, 46.

broadcasting -- hence they have opposed any DTV broadcast or programming requirements for the new channels.⁸⁸

Although the broadcasters argued long and hard in 1987 to have spectrum reserved for HDTV broadcasting, they are now less enthusiastic about using that spectrum exclusively for that purpose. Recent events relating to Direct Broadcast Satellite and Cable TV service have affected the objectives of broadcasters with respect to the future of television service in the U.S. They certainly want the spectrum they fought so hard to preserve, but they are struggling to find the optimum use of that spectrum for profitable business enterprise while simultaneously satisfying their stated altruistic goal of improving the technical quality of television service in the U.S. by introducing HDTV. Although far from unanimous in their view of how to proceed, most broadcasters argue that they should be given flexibility in using the new HDTV spectrum that they expect to be given by the FCC. Some believe that this means that they can use the spectrum full time to transmit multiple SDTV programs as the DBS operators are now doing and the Cable TV operators are soon to do.⁸⁹

Sensing a potential loss of consumer demand for their HDTV cash cow, set manufacturers backing the ACATS standard have asked the Commission to tie broadcasters' hands and force them to broadcast HDTV programming. The Grand Alliance has argued that the Commission should require broadcasters to make HDTV "the primary application" of their DTV channels; absent assurances that they will primarily offer HDTV programming, the Grand Alliance maintains

⁸⁸ NAB Comments at 5.

⁸⁹ HDTV Prospects, *supra*, note 70, at F-3/28 - F-3/29.

that “the Commission’s approach to lend broadcasters a second channel is not sustainable either as good policy or as a matter of law.”⁹⁰

In addition, the Grand Alliance has asserted that, if broadcasters are given the flexibility to determine how much, if any, HDTV programming they will offer, SDTV may become the preferred format. HDTV may never establish a foothold in the market, and therefore, broadcasters should cede their audiences to other video distribution sources if the broadcasters are reluctant to assume the considerable risks of primarily providing HDTV programming.⁹¹

If [broadcasters are] not interested in the offer [to convert to DTV and HDTV], they should stand aside and plan for the orderly phase-out of their antiquated analog NTSC service, while other entrants vie for the opportunity to offer digital ATV/HDTV in the century to come

It appears that the manufacturing interests behind the ACATS standard are attempting to use the Commission’s processes to force consumers to buy HDTV-capable receivers against their will by forcing broadcasters to transmit HDTV programming, against *their* will. Such attempted manipulation of the administrative process should not be countenanced.

Receiver manufacturers have predicted that, under the ACATS standard, **penetration of digital receivers after 10 years will be only 32%.**⁹² For this

⁹⁰ Grand Alliance Reply Comments at 8.

⁹¹ *Id.* at 19-20.

⁹² EIA Reply Comments at 6. EIA claims that total penetration of DTV, counting users of set-top DTV converters, would be much higher though it fails to quantify this prediction with specificity. *Id.* at 6, n. 7.

reason, even some receiver manufacturers have advocated a long transition period to DTV.⁹³

If broadcasters are required by the Government to turn off their current analog signals and to broadcast exclusively digitally in 2005, millions of Americans will have to purchase a still relatively expensive digital HDTV set -- years earlier than they otherwise would do so -- or purchase an interim digital-to-analog set-top converter box. Philips believes strongly that consumers, not the Government, should control the pace of the digital TV transition. *Consumers rebel if they are forced to buy products before they are ready. Consumer resistance to converter boxes can be expected to be quite vigorous. Why should consumers have to pay for a converter box to receive the same programming they otherwise would receive over their old TV sets without having to pay a cent?* By contrast, a more relaxed transition closer to the 15-year plan developed by the FCC, will account for a natural product obsolescence and relieve pressure on consumers.

Anticipating a long transition period for consumers to accept digital TV, broadcasters have opposed the establishment of a date certain for complete conversion to DTV.⁹⁴ But the transition period can not last indefinitely; yet as Philips has aptly observed, consumers will rebel if they feel they are being forced to purchase something before they are ready.

Broadcasters' audiences, facing the prospect of having to spend large sums of money just to continue receiving terrestrial broadcasts, can be expected

⁹³ Bingham Testimony, *supra*, note 17, at 14.

⁹⁴ See Grand Alliance Reply Comments at 23

to abandon over-the-air broadcasters *en masse* in favor of less costly alternative video distribution media such as cable and DBS.

Thus, the Commission should not mistake broadcaster support of the ACATS standard as an endorsement of its quality or a commitment to use newly allotted channels primarily (much less exclusively) for free digital broadcasting. In weighing the potential costs and benefits to broadcasters of alternative DTV standards, the Commission should not ignore the potential ultimate cost of a needlessly expensive and restrictive standard -- further loss of broadcasters' audiences to transmission media that are unburdened by an extravagant and expensive DTV standard.

3. The U.S. Will Not "Leapfrog" Europe and Japan By Adopting the ACATS Standard, And Failure to Adopt the Standard Will Not Result in Worldwide Dominance of the European DTV Standard.

Advocates of the ACATS standard have argued that the U.S. should hasten to adopt a DTV standard to obtain an advantage over Europe, which "has adopted and mandated the DVB (DTV) standard, and is heavily promoting it around the world."⁹⁵ The ACATS standard, they contend, is a significant technological triumph for the United States, which could be trumped by the European DVB standard if its adoption is delayed⁹⁶

⁹⁵ Grand Alliance Comments at 30.

⁹⁶ *Id.*

The irony of foreign-owned firms waving the American flag is inescapable. Only if the inferior European- and Japanese-based DTV formats are excluded from the ACATS standard can the U.S. properly take credit for advancing the quality of digital TV and growth of the NII.⁹⁷ but as it is, such credit is not only undeserved, it is at best a dubious distinction.

Moreover, the goal of beating a competing standard to market is woefully inadequate to justify hasty adoption of an inferior standard, particularly where, as here, it would seriously compromise the interests of American consumers and industry.

The European DVB system is inferior to both the ACATS standard and, to a much greater extent, to the base-line format CICATS has proposed because the European standard provides only for interlaced scanning and non-square pixels.⁹⁸ If the U.S. standard did not support obsolete technologies such as these, the European standard would have even less chance of surpassing the U.S. standard in world markets. If it is adopted, CICATS's proposed base-line DTV format would provide greater confidence than the ACATS standard that the vastly inferior European standard will not overtake the U.S. standard worldwide.

⁹⁷ Although superior DTV technology was developed by U.S. members of the Grand Alliance, its survival has been threatened by lumping it together as an all-or-nothing package deal with inferior technology developed by European and Japanese interests. Clearly these offshore interests realized that they had to link themselves to U.S. interests to have any chance of peddling their inferior technology in the U.S. market.

⁹⁸ Grand Alliance Comments at 30. As noted in Section III B above, the European HDTV system has been a failure.

If the U.S. adopts the ACATS standard, with its inferior technology, the odds are not as good that the U.S. standard will surpass the European system.

In any event, numerous other standards, such as NTSC and PAL, are different between the U.S. and Europe. Such differences do not justify rushing to adopt an inferior standard here.

4. The Investments Made by Proponents of the ACATS Standard Do Not Justify Its Adoption.

Members of the Grand Alliance claim that they have invested \$300 million, and that the rest of the industry has invested an additional \$200 million, to "create and commercialize HDTV."⁹⁹ Even if these claims are true, they do not justify the significant technological drawbacks (including limited flexibility and inadequate computer compatibility) and the enormous consumer costs that would attend adoption of the ACATS standard. The Commission's goal in this proceeding should not be to set a standard that rewards those who spent the most money, but to adopt the best standard based on the relative merits of each proposal.

The claimed investments in HDTV are not impressive. U.S. computer and software companies spend far more in a single year on research and development than HDTV's creators have allegedly spent throughout the entire course of developing HDTV.¹⁰⁰ According to Professor Schreiber, each U.S.

⁹⁹ Philips Comments at 2 & note 3.

¹⁰⁰ See CICATS Comments at 50-51.

automaker spends more to develop a single new model than the HDTV creators claim to have spent in the aggregate.¹⁰¹ Most significantly, the value of the reclaimable NTSC spectrum that may be lost or delayed by protracting the transition period -- tens of billions of dollars -- dwarfs the investment proponents claim to have made.

Whatever the investment made to develop the ACATS standard, it is not, and should not be, a legitimate justification for mandating the standard, even if the standard were *not* inferior. The Commission therefore should accord no weight to proponents' claimed investments in the standard.

5. The Technical Concerns Raised by the Computer Industry Have Been Largely Ignored Throughout the Development of the ACATS Standard.

Proponents of the ACATS standard contend that computer and other interests were given ample opportunities to participate in the development of the standard, and have had a fair hearing of their concerns. Notwithstanding any opportunities the computer industry may have had to participate in developing the standard, the reality is that the technical concerns they and others have raised, both here and in earlier stages of the standard's development, have largely been ignored by the electronics manufacturers that have dominated the process.

The computer industry's technical arguments in this proceeding are not new -- they were doggedly made by MIT academics throughout the standard's

¹⁰¹ Comments of William Schreiber, Part II (filed July 11, 1996) at 2.

development process, but were virtually ignored. Professors Schreiber and Lim have recounted that, if suggestions were made for technical improvements to the standard (such as the suggestions made herein by CICATS) that would depart from the entrenched technologies and *modus operandi* of the incumbent manufacturers most deeply involved in the standard's development, representatives of those manufacturers simply ignored the suggestions for improvement.¹⁰²

The process through which the ACATS standard was developed and approved was anything but objective and unbiased. As CICATS noted in its Comments, the Grand Alliance is and has been dominated and controlled by consumer electronics manufacturers.¹⁰³ And any doubt that the Grand Alliance and the Advanced Television Systems Committee ("ATSC") -- the purportedly neutral body that approved the standard -- are under common control¹⁰⁴ is removed by comparison of the comments filed by each of these parties on July 11, 1996: Astoundingly large portions of their submissions are literally identical. As this highly coordinated effort demonstrates, no one can credibly deny that the electronics manufacturers dominating the Grand Alliance, with their fellow consumer and studio equipment manufacturers, did not steer the process through which the ACATS standard was adopted and approved.

¹⁰² See Section III B above; CICATS Comments at 22 & n.53.

¹⁰³ CICATS Comments at 13-15, 55-56.

¹⁰⁴ The Grand Alliance (but not ATSC) admits that "[m]ost of the participants in the Advisory Committee process and all of the members of the Grand Alliance are also members of the ATSC." Grand Alliance Comments at 5, n.4

But whether or not computer interests have had a fair hearing of their concerns, it would be a mistake to ignore those concerns at this juncture, and to foreclose a better proposal that would save consumers billions of dollars and produce better quality and more computer-based benefits. The failure to take full advantage of this rulemaking proceeding and to give all sides a full hearing would make a mockery of the administrative process and suggest improper pre-judgment of the issues.

CONCLUSION

For the foregoing reasons, the Computer Industry Coalition on Advanced Television Service urges the Commission to refrain from adopting any digital television broadcast standard except to the extent necessary to prevent interference. In the alternative, if the Commission determines that adoption of a more specific digital broadcast standard would serve the public interest, it should