BIG TIME TV

HDTV is the big wave coming-done right it is even bigger than the world wide web.
Dale E. Cripps, HDTV Newsletter

The long awaited HDTV/DTV standard was set by the FCC December 24, 1996. After nine agonizing years of intense development the standard moves to the fast track for commercialization.

Make no mistake, commercialization of HDTV/DTV is a staggering task—one which fundamentally changes the nature of traditional broadcasting while completing a major step toward the convergence of the television and computer industries.

Imaginations can now soar unfettered from both groups to deliver what has never been seen and heard together in the American home and business. HDTV delivers not only the perfect traditional theatrical experience in the home but comes with the full power of the computer industry to aid the visual and aural experience. It is big in every way—big screen, big experience, big vision, big money, BIG RISK. Those who have contemplated its future say it will leave the consumer's breathless, and for many generations to come... providing the transition from today's television standard can be completed.

There must always be a serious pause when considering a transition from one standard to another. It is easy to forget the scale of such a task. Abandoning standard television for something that is still unformed and unproven is so big a work as to be unrealizable by all but the rarest of individuals. It is only slightly more comprehensible when seen as a coordinated and cooperative national objective, effort, and event.

The transition comes at a staggering price. It demands from its investors godly patience, lionly courage, maniacal determination, and the unswerving will power of all television executives, most computer executives, state and federal governments, regulatory agencies, programmers and, most importantly, every television consumer. All must act from their own turf at just the right time if this revolution is to be "bloodless." Without these "virtues" in force the transition may well stall and leave in unrepairable shambles a once powerful and well operating businesses—NTSC television—a standard long considered the most valuable asset of the American networks and stations.

For the transition to HDTV/DTV to succeed the all-important consumer must be wooed and won over if they are to do their part—spend lots of money. To move the consumer off the abundantly programmed NTSC standard every bit of the potential attraction inherent in the HDTV/DTV technology must be exploited.

It is important that all options enabled by digital are employed in producing this consumer attraction. I point here to image quality, flexibility, wondrous computer enhancements, interactive windows, and every permutation and combination of these features imaginable.

It is not solely up to the creative community to drive it. It is not uniquely dependent upon programmers to move it forward. It is not the singular responsibility of receiver makers nor the province of wired and
singular responsibility of receiver makers nor the province of wired and non-wired worlds to advance it, but rather the success of the transition is up to the combined powers of all acting at their appointed time.

Who Is Now In The Lead?
The Grand Alliance, final developers of the FCC standard, dissolved into separate parts upon the setting of the standard. Their lead evaporated into a competitive fizz. Right now journalist with an eye to the potential are leading a parade of hopefuls. Will the Consumer Electronics Manufacturers Association (CEMA) take the lead next on behalf of their receiver making members? The members in that international body are still terrified of destroying their NTSC business-especially profitable big screens-from anything they might do to create a lead. They are trying desperately to nail down things like what size screens people want. Of course, there is no reliable data to draw from.

Will broadcasters do their "assigned duty" to supply HDTV/DTV signals and lead the way? This has been a haunting question since, after all, much has been said about broadcasters' apathy towards the whole HDTV movement. The order of business for them has been to first secure the digital channels from the FCC. The whole idea behind developing the HDTV standard was in support of that goal. Cable has monor inclination to take the lead, though benefit from another's lead. They are looking for additional channel capacity for new channels, not delivering better ones. Satellite has so far the same philosophy.

But things have changed for broadcasters since those first days. Fear of alternative competition in multiple channel standard television has given the networks a new view of what HDTV means to them. HDTV has become the centerpiece strategy of each of the three older television networks for their future. They see HDTV as the means now for rebranding themselves in an increasingly cluttered NTSC program environment. They must do HDTV to stand out, especially among younger, and to them, crucial new viewers. NBC's notable engineer, Stan Baron, claims "doing HDTV/DTV" is a mantra at Rockefeller Center. ABC has said without reluctance they are in it for keeps. CBS is now run by an engineer, Michael Jordan, who has seen and is personally excited over the technical possibilities. Joe Flaherty, a legend from that network, has always been a champion for HDTV. Fox... well, we must wait to see what strategy emerges from Mr. Murdoch. Murdoch has multiple channel systems in most other parts of the world and could be expected to turn to DTV for multiple program distribution as a competitive tool rather than doing HDTV. The independent stations are coagulating into larger clots as a result of relaxed FCC ownership rules and becoming better equipped financially to do it. Fisher Broadcasting recently installed an experimental digital transmitter in Seattle (KOMO) as did Capitol Broadcasting (WRAL) in Raleigh, North Carolina. NBC supports a trials station in Washington, DC.

If PBS Won't Do It, Who Will? PBS has seen a light turn green and is busy raising money for HDTV. Their current slogan underlies a capital raising campaign using HDTV as the reason for large personal and institutional gifts. WETA in Virginia put up experimental transmissions and KCTS and Oregon Public Broadcasting have joined in an alliance in order to be first in their region. Alliances are forming left and right among PBS stations. PBS is clearly on their way for a variety of reason, not the least being able to penetrate deeper the educational systems of the country with digital data streams. If their capital raising efforts are realized delivering HDTV before most commercial stations is assured. That,
delivering HDTV before most commercial stations is assured. That, interestingly, will include being "in the clear" (no encryption) from their satellite.

This last point may see the traditional networks choosing the same strategy, especially in areas where affiliates are slow to act. That means national coverage can be expected with network programming. The responsibility of receiving is, of course, left to the consumer.

Skeptics ask if all the talk about doing HDTV isn't premium money for insuring free access to the digital spectrum. Senator McCain (R-AR), now Chairman of the powerful Senate Commerce Committee, is raising his visibility for a big fight. He believes there should be no free lunch for broadcasters. He says that auctions must be considered as the superior method for allocating the digital channels. Some quid-pro-quo deal with the government is another "tax" being suggested on the digital spectrum, i.e., do public service programs including campaign time at no cost. Some in the computer industry have eyed longingly these channels for their own digital dreams, but few analysts believe they have the programming capacity to hold the interest of the general public as do the seasoned broadcasting companies. (The computer industry needs to come in full support of broadcast programming FIRST if they are to gain the television audience in the home). FCC Chairman Reed Hundt said recently for the nth time that he welcomes the authority from Congress (not included in the Telecom Bill) to auction the digital spectrum. He also favors some commitment from broadcasters to do some ill-defined public service. The fight is not over on this allocation issue and auctions have always threatened to change drastically the economics of HDTV/DTV for broadcasters. Without auctions a painful and "iffy" ten year pay-back on the DTV investment is still to be expected. As one broadcaster put in a PBS radio interview, "You have to understand that for every digital viewer we gain we lose an analog viewer." HDTV addresses primarily the problem of losing an analog viewer to someone else in satellite, cable, or DvD. Some smaller broadcasters may find cost for going digital too great and bow out gracefully by remaining in analog until forced to abandon that license somewhere down the road. The Clinton Administration wants to auction the existing NTSC analog channels in 2002 and secure their return sometime in 2004. No one with a hundred brain cells left believes that is ever going to happen.

The big problem facing financial decision makers today is how do you evaluate the sincerity of the various broadcast leaders in their favorable statements about HDTV? Large equipment manufacturers want to know how to plan their new product and marketing strategies. If ones' customer base moves to digital but you don't, who will replace you?. If you go all-digital in product lines and the markets don't follow, who will replace you? It is this kind of dilemma and fear that makes product managers want a bankable answer-one underwritten with the strength of a Lloyds of London insurance policy. Even large production equipment organizations like Tektronics cannot venture to lead, but only to follow their traditional broadcast customers. Managers face tremendous questions and they don't have enough reliable information yet from broadcasters to read the tea leaves.

Another idea making the paranoid zip to full panic is the one which says broadcasting is fast becoming obsolete because of many new digital things. A recent survey showed that if forced to choose those owning both television sets and computers fully 65% would rather part with their television than their computer. Rational thinkers say this idea of broadcasting falling off the consumer's map is, well... naive. Some see the
broadcasting falling off the consumer's map is, well... naive. Some see the
battle building between the computer and broadcasting is really a question
of programming prowess. Is the web the right medium for Oprah? Does the
internet offer gripping drama (other than from the wait for a connection?)
and snappy comedy? Should you access the Library of Congress on TV?
Broadcasting will always formulate an innovative response to outside
threats with the added programmability offered by digital flexibility.
Employing it, of course, would not in itself guarantee repatriation of
one's viewers. But without it may prove difficult.

What Channel Did You Say That Was?
Then, there is the question of channel assignments—did the broadcaster get
from the FCC what they wanted? Some say they didn't. Will the same reach be
possible? Are new towers needed or available? What is going to be the power
bill? Can you buy transmission equipment in time to save your audience from
a new wave of home thrills coming to their computers? Will there be long
and delaying fights over channel positioning, or other things to slow
investment in digital transmission? The FCC will make the allotment of the
channels before April's end.

Timing...
The FCC Chairman, supporting the Administration's plan for auctioning the
returned analog channels has asked broadcast executives informally if there
is any hope of shortening the 6 year time line now scheduled for a station
to get on the air with digital. Few think it can be shortened appreciably
due to a host of reason. PBS, needing to raise money to meet the schedule,
wants to get ahead of the curve and provide incentive and support for their
fund raising business. They have outfitted a demonstration vehicle which
they want to pull around the country ASAP and demo HDTV. Bruce Allan of
Thomson in Washington hopes they will consider more "appropriate" timing
since every person made to anticipate the coming of HDTV in 2002 will
likely not buy a big screen set for 1997. But what is the appropriate
timing? Allan is concerned that no one quite knows. Some of the major
networks have said their own stations would be operating digital services
early than any mandated schedule. That translates to late 1997 to mid
1998. But no one can craft a national strategy for the transition from
experience. No one around has managed a transition of such magnitude. The
industry has come upon uncharted grounds. The only approach apparent is to
make a personal commitment to reach the goal of full transition. Sounds
easy, but the memory of David Sarnoff might here be recalled. He stood in
the early 1960s weeping in the RCA board room telling his board of
directors that color had failed for RCA and that the production line must
shut down. The company could endure no more pain (1% penetration in 8 years
and only 3% penetration in 10 years). That memory haunts the stoutest among
those being prepared to marshal the digital transition. Shortly following
the color line shutdown at RCA huge orders for color sets poured as a
direct result of some exciting color programming that finally touched
consumers enough to anti-up big bucks for the still primitive color TV
sets. Robert Rast of General Instruments offered today that there may be a
few more HDTV obituaries before it hits the big time.

What Happened With the Standard?
There was a disagreement before and after the ATSC/ACATS FCC submission of
November '96 of the fully document and tested HDTV standard. Computer
collations had sought progressive scanning exclusively. Television folks
insisted on keeping interlace scanning in the standard. Broadcasters hoped
for lower receiver costs and available interlace production equipment.
Computer people wanted access to new markets. (Motion picture interest
Computer people wanted access to new markets. (Motion picture interest wanted aspect ratio changes as well, but were not taken seriously). FCC Chairman, Reed Hundt said he would not act to set a standard until there was industry-wide agreement and support. "Only twice," said CEMA's president, Gary Shapiro, "have the other Commissioners over-ridden the Chairman's position." The disagreements posed a very serious threat to the HDTV movement. Commissioner Susan Ness understood that without a solid standard receiver makers could not gamble on making sets. The Grand Alliance--the major stakeholder--offered to accept the standard as written with a caveat of the consumer electronic manufacturers, broadcasters, and computer people form a committee to determine a migration path to progressive scan. "We all said earlier that it is the right thing to do,"

The computer industry proposed a move to progressive scan five years from the engagement date of the standard. "All broadcasters will not even be operating by that time. Five years is as day one," said Thomson's Bruce Allan.

Even had the Grand Alliance been willing to drop interlace they could not have done so easily. Fifty companies voted on the standard within the Advanced Television Systems Committee (ATSC). To make a change of that magnitude is not mere editorial license. "You have to get everyone willing to make that change," explained Dr. Robert Hopkins, former Executive Director of the ATSC.

Some feared that in the search for an agreement manufacturers would abandon their allegiance to broadcasters and settle on whatever could be settled upon that would leave a non-ambiguous standard. It began to show. "The broadcast business is not ours," said Thomson's Allan. ABC and FOX aided the computer arguments by disagreeing with the interlace insistence of the Broadcast Caucus (made up of networks and group broadcasters). ABC said progressive scan was fine with them, though interlace needn't, and shouldn't be excluded for those who still want it. Many smaller broadcasters weighed in on the side of progressive scanning, taking less seriously the threat of higher cost production gear. The Broadcast Caucus, led by NBC's Mike Sherlock, stayed the course with interlace as if it were shares in a gold mine. Nothing moved for months. Comments and Reply Comments streamed in to the FCC. Each Comment was loyal to original positions.

One goal of some in the computer group was to have only computer-friendly displays (progressive scan) in the home ASAP by way of the consumer electronics industry. That would allow a $300 to $500 computer price tag for the general public as long as the display was purchased as a TV set. The Nintindo/Sega model is an example of this strategy. A few dollars for the device, bundles for the programs, and all delivered on a display bought for another reason. CICATS (Computer Industry Coalition On Advanced Television Services) was formed to with the goal to having the FCC mandate progressive scanning only and hope the receiver makers would build only progressive scan displays.

Oracle's chief, Lawrence "Larry" Ellison, suggested why this strategy was crucial when he said at the Oracle Developers Conference in Paris, France that the day of the personal PC is over-the day of the network computer dawning. The big, or mainframe network computers, in this scenario, distribute data and programs around the world on high-speed networks to cheap, or even free terminals-all the device that is needed by a user who already owns a suitable display. "They will give network computers away like cellular phones," predicted Ellison, "and charge monthly for the
like cellular phones," predicted Ellison, "and charge monthly for the hookup." But a high grade display is too expensive to give away, or sell cheaply. Sony is selling a 16:10 28" HDTV-like monitor for $5000.

Not Impressed
Peter Fannon, former chief of the testing facility (Advanced Television Test Center) for HDTV was hired by the GA and CEMA to put out an intelligent spin on issues as they arose. He charged that computer groups wanted to lead the convergence of industries at broadcaster's expense. TV is a business dependent upon viewer hours-advertising income. The internet is a monthly charge like cable. The internet does not have built in the advantage typically offered by financial power-no amount of money will make HTML into other than HTML. Original programming-the chief asset of broadcasting-is less manageable on the internet. Many can make "pages" to the complete standard of the internet. Few can make programs to the commercial standard of national television. Bruce Allan from Thomson was not impressed by the computer arguments: "I had not seen anything from the computer industry to make me believe I should make changes."

CICATS suffered severe damage to their credibility as the result of promoting what turned out to be faulty homework. Their economic analysis tried to justify the overthrow of the ATSC submission. CICATS drew a dramatic distinction in cost between their proposal and that of the GA/ATSC. The flawed data was clearly wrong and was first labeled "amusing." But when it was used publicly a second time after initial discrediting it became "contemptible." The bogus CICATS report claimed the GA systems would burden the consumers with $91 billion more than would their own two tier layer/enhancement MPEG 2 progressive scan approach. To reach that $91 billion premium a Boston consulting firm extrapolated cost from the DSS/MPEG II box. CICATS claimed a GA box would have to sell for $1354 retail based on the extrapolation. Using Moor's law a price of $713 would prevail in just two years. But CICATS' calculation was inclusive of the dish antenna, the LNB and the architecture of the box, all multiplied by a factor drawn from processor and memory costs differentials today. Thomson looked at the bill of materials on their DSS box. With over 3 million made the cost difference between a DSS box and a GA HDTV box is "a little bit of memory and an MPEG 2 high level processor." The cost for the memory required for an HDTV implementation and the MPEG processor are below what they were when Thomson/RCA introduced the first DSS box. "These people would have you to believe high-definition is the reason for all of this expense. But when you apply Moore's law, the difference between a set that would have both standard definition and HDTV capabilities vs one that would do SD only turns out to be $48 today. Apply Moore's law to the year 2004 and the premium for a full Grand Alliance decoder becomes $3 to $4 difference over the low end of a layered approach."

A Fix
FCC Commissioner Susan Ness intervened in early November '96 by sending a letter to both sides urging meetings in November for the express purpose of reaching some kind of an agreement by Thanksgiving day. The parties met in Law Offices of Covington and Burling in Washington, DC and emerged haggard and bloodshot at the last possible hour. The first compromise proposal made by broadcasters became the basis for their long-sought agreement. The agreement was signed by Mike Sherlock for broadcasting, Paul Misener for CICATS, and Gary Shapiro for CEMA. It was good through December 31st. If by then the FCC did not set a standard all bets were off. Under the agreement no one could endorse the idea of spectrum auctions in Congress. The agreement left scanning parameters up to the discretion of industry. A
agreement left scanning parameters up to the discretion of industry. A plan of voluntary compliance would have to substitute a specific mandate. In compliance with the agreements the FCC excluded table 3 from the ATSC standard. That left the bit rate/power, transport, and MPEG II portions of the standard in tact. The scanning and frame rates were excluded.

A developer promoting both a layered approach and 2:1 aspect ratio, Gary Demos, and the retired emeritus of TV technology from MIT, Professor William Schreiber, have continued to lobby the FCC with their ideas with diminishing effectiveness. The Commission made a unanimous vote for the modified standard on the 24th of December. A round of congratulations flooded Email boxes across the country. Now everyone could rest up over the holidays for the hard part—the commercialization phase.

**Courage**
What does the standard setting mean? At minimum it means that the machinery for commercialization of DTV/HDTV can be set in full motion. Joe Flaherty (CBS) said long ago that this transition would require courage. Now courage is more than ever needed to see that all make it over the first unfamiliar hurdles. The standard set means that billions of dollars in new investment must be unleashed by signal providers, manufacturers of production, transmission, and receiver equipment as long as it is sure that all the critical elements are moving forward together. If the industry is sincere in completing this crossing from analog to digital transmission much of that investment must be focused upon a major product launch in 18 to 24 months from the date of the standard. A strategy that takes into account regional roll outs is useful. A strategy that takes into account only DTV terrestrial channels will have trouble eliciting favorable market behavior. If it comes down to competing against the 200 programs offered by the soon-to-be A Sky B (Murdoch) box and dish antenna (able to deliver localism in 50% of the nation) or the 4 or 5 programs offered per station via a terrestrial digital converter box and antenna, the bet has to be with A Sky B getting the lion's share of the digital business. It doesn't mean that broadcasters won't build for digital transmission, because they have to. It means that if they are to distinguish themselves from the multi-channel worlds and the emerging internet competitors they had best leap from trash consumerism to class consumerism and do it with HDTV. Why? The market has to be excited in order to behave as desired (buy into digital receiving) and only HDTV has that power. Even with all the power in the world the HDTV diffusion is going to be painfully slow. If the entire industry--including computers--comes behind HDTV, then the crossing will have some oars in the water and will out perform the penetration of color. Otherwise this is a financial turkey of the first magnitude. HDTV will contrast favorably against the multi-channel standard resolution guys who must look somewhat peaked on an HDTV set. Anyone who owns a DSS knows they quickly click away from any inferior quality images. If HDTV is not the centerpiece and only SDTV prevails, consumers will not care if any standard def image is made up from digital methods or corn flakes. They won't pay for the tiny difference in image quality that might come from SDTV nor need the extra channels in cabled areas. If some interactive feature is thought the key to salvation by broadcasters they need to consider that there is no more interactive potential than comes from browsing the internet. Ancillary data services enabled by DTV transmission is a low priced commodity business with many alternative suppliers. Whatever strategy a broadcaster has for inclusion of interactive features in DTV will find quickly that the competition is already in the millions of web pages. The last February Nielson shocked the industry when it claimed a loss of 1 million viewers from "television" for
the month. They went to the web. Recall that survey of those owning both computers and television sets which showed that 65% would rather give up television if they were forced into a choice. If the TV is to become the computer one might extrapolate from that study that it will be used a great deal for other than traditional TV viewing. But it is a programming issue.

It is a question asking which business can provide the highest level of attraction? HDTV is a new breed of consumer investment. It is a new breed of entertainment product. It is the only technical light at the end of the broadcaster's tunnel. If HDTV is programmed to a T broadcasters will have an expanding future. Those fearful or timid plans haunting interdependent 5th estaters today must give way to bold and powerful actions if they are to have a viable business in ten years.

Making Boxes
The set makers will build with price/performance objectives. That suggests strongly the inclusion of interlace displays for low end markets. That hurts the computer groups to some degree. But the cost of interlace displays is always less. In consumer electronics any less cost means vastly more market.

In a display of bravado Compaq Computer said that if set makers were going to make interlace they, Compaq, would enter the market with all progressive sets to counter. But few think they can weather the frightful competitive environment of consumer electronics. That is a business where factories close abruptly in one nation to open in another for razor thin gains in labor costs.

HDTV will very likely be the domain of the existing CE manufacturers. They must invest huge sums for learning all digital technology and advancing the art of large high grade displays. But they understand best the down and dirty fight for consumer dollars. They cannot depend upon the inertia found today in the computer industry where it has become newly fashionable to own a home computer. That freshly expanding universe allows for many expensive things which are not tolerable in television.

One thing for sure. All of us will benefit from this step forward. Some have gone on to suggest that the standard of living will hang on the success or failure of HDTV. Certainly one will experience all standards of living with HDTV.

Dale E. Cripps

127