

High-Definition TV: The Grand-Alliance

I. Executive Overview:

For over three decades many broadcasters and governments have attempted to bring high-definition television to large audiences in varying formats. Various problems have surfaced to either completely prevent or hinder the widespread use of HDTV in the United States and all over the world. This report highlights the difficulty of market penetration for HDTV systems.

II. Critical Issue:

The critical issue this report analyzes is the pervasive issue of uniformity. In other words, how can HDTV providers deliver a uniform standard that is acceptable to a widespread audience while making a big enough change to improve current standards? Tangential questions are those involving backwards compatibility between systems, benchmarks to measure system performance, and the versatility of any single standard.

III. Analysis:

The major problems surrounding uniformity are strong foothold of traditional standards, high costs of changing standards, different needs of different groups, and a lack of a benchmark for determining the best technology. Each of these factors is interrelated, and together they pose a formidable challenge to HDTV broadcasters.

A. Traditional Standards

NTSC and PAL are widespread standards used in today's broadcasting and television systems. A large portion of all video equipment all over the world is configured for these standards alone. These standards have been around for decades. Changing these standards will be very difficult since many broadcasting companies and systems have the NTSC and PAL systems very engrained in their cultures and technologies. The initiative to change will be met with much opposition and this poses a significant threat to the ability of a new standard to penetrate the market.

B. Costs of Change

Related to tradition of the standards is another issue that deals with the difficulty of change in and of itself. The costs of a new system would be monumental for a few reasons. First, in most scenarios, all pieces of equipment would need to be modified or replaced completely to support new HDTV technology. This is a huge outlay of capital that is required to realize new profits and opportunity. Second, marketing for a new HDTV system would need to be extensive and expensive in order to convince broadcasters to change their existing systems or adopt a new system. Third, costs would skyrocket because the new technology would only be accessible by a small group of consumers due to the high cost of the technology. The small customer base would necessitate higher service costs and cycle back to low customer accessibility due to high costs. Unfortunately, there are very few companies that can bear so many upfront costs.

C. Varying Needs of the Consumer

In theory, uniformity is a great idea because costs after the initial change would be much lower since the majority of systems would run on one standard and conversion costs would be very minimal. Unfortunately, this utopian view cannot be applied so easily to the broadcast technology world. A major reason that different standards are used today is because different groups have different requirements for what they want in a broadcast. Some groups require sharper picture and others require minimal bandwidth use, etc. The implementation of a new standard is a problem as explained in sections III.A and III.B, but another major problem is a creation of that standard, in and of itself. How can a standard be created such that a variety of groups can use the standard to meet their needs? Can the standard be minimally tweaked in different ways to cater to the needs of many different groups? Does a standard even exist that has characteristics that allow it to be used in a widespread, uniform setting? These are important questions that must be discussed when pushing for a uniform broadcasting standard.

D. Benchmarking Technologies

If there existed a technology that clearly outperformed other technologies, it would be relatively easy to write-off other technologies and focus on the high performance technology. Unfortunately, no benchmark exists to prove one technology better than another. Additionally, the issue of varying needs discussed in section III.C proves that comparing different broadcasting companies is like comparing apples and oranges because different groups have different requirements. As long as different groups wish to support different standards, uniformity will be an arduous ends to attain.

IV. Recommendation:

There is no easy solution to the problem of achieving uniformity, especially in an industry as large as the broadcasting industry. The best course of action is to mitigate the barriers to market penetration as much as possible because removing them is nearly impossible. This report recommends a three-pronged approach to lead to uniformity. First, the creation of a benchmarking system is necessary. Second, a standard needs to be created in a flexible manner. Third, the standard must be proven significantly better than traditional standards, to debunk the tradition argument proposed in III.A of this report.

A. Benchmarking System

In order to prove the superiority of a HDTV broadcasting system, a benchmarking system must be developed to compare different broadcasting standards. This benchmark should include scores for picture quality, ease of portability, efficiency of resource use, and some ratios to show quality versus minimization of resource use or quality versus cost.

B. Flexible Standards

In order to solve the problem of flexibility discussed in section III.C, a standard must be created that can cater to the needs of many. In order to avoid the creation of completely different standards, there must be a single standard which has the ability to be modularly changed in order to provide different groups with the requirements they provide. This report does not take a stance on the technological feasibility of this option, but rather, it is suggested that any created standard appeal to multiple groups of broadcasters. Flexible standards make it more likely that many groups, companies, and governments will adopt a standard since it is easily accessible by many groups.

C. Standard Must Be Proven Superior

Using the benchmarking system described in IV.A, the standard of choice must be proven significantly superior to existing standard. This comparison is an absolute necessity in order to mitigate the tradition factor discussed in III.A. Once a standard is proven significantly better, a company can tie specific increases in quality and profit to the new standard. It is much easier to convince a company or group to change their traditional standards if very specific and tangible increases in efficiency, profits, and quality can be directly tied to the change.