

COMMISSION OF THE EUROPEAN COMMUNITIES

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REPORT ON HIGH DEFINITION TELEVISION

(Communication from the Commission)

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COMMUNICATION FROM THE COMMISSION

1. INTRODUCTION

This communication reviews the state of progress achieved in the field of new audio-visual technology standards. It covers the period from January 1986 when the Commission submitted a Proposal for a Council Directive on the adoption of common technical specifications of the MAC/packet family of standards for direct satellite television broadcasting (COM (86) 1). The Directive was formally adopted on 3/11/86. It is in keeping with the general framework of audio-visual policy defined by the Commission on the 19th of March 1986.

1.1. BACKGROUND

In its communication to the Council on European Telecommunications Policy (COM (86) 325) of 5/6/86 the Commission advised that the aim of the MAC/packet Directive was to avoid the emergence of a large number of incompatible TV transmission standards (as had occurred in the past with the PAL/SECAM standards) in readiness for the introduction of direct broadcasting by satellite (DBS). In addition this new family of standards would be capable of evolving into the next generation of television: high definition television (HDTV).

In the Summary Report on the Green Paper on the Development of the Common Market for Telecommunications Services and Equipment (ref XIII/197 (87) of 26/5/87), the Commission noted that the convergence of telecommunications, data processing and audio-visual technologies is outdating traditional boundaries between the telecommunications network and the terminals sector, and between services traditionally provided under monopoly and those provided in a competitive environment. In particular, satellites enable provision of services within and between countries and on a global basis. The report observed that the satellite communications sector is going through rapid change requiring common Community positions on development of the European earth station market (standards), and on the future development of satellites (relationships between EUTELSAT, national and private systems, INTELSAT, and the role of the European Space Agency (ESA)).

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The trend towards digital operations is blurring the former technical and standards distinctions between broadcast television, information technology and telecommunications. For example: many computer applications now require higher definition display screens; 2-way wide-band services, as contemplated in the RACE Programme, give major priority to high speed video transmissions; and new developments in home electronics require interconnectivity of audio, video and other household products. The synergies possible through the mutual exploitation of technology developments is of strategic importance.

1.2. *FROM MAC TO HDTV*

It is widely recognised that the Community played a significant role in creating a European consensus against the Japanese led (and US supported) proposal for a new production standard for HDTV. Thus, at the May 1986 Plenary of the International Radio Consultative Committee (CCIR), the Japanese/US proposal was not accepted and instead an additional period of study (4 years) was agreed in order to identify a new production standard suitable to all parties. This additional study period has allowed European industry time to develop and demonstrate an alternative HDTV system based on its philosophy of compatibility and evolution. MAC is the base of this system. In June 1987 the Europeans formally notified the CCIR of the parameter values for its HDTV system, and in November 1987 these were accorded the same official status as those of the Japanese.

The CCIR timetable requires that Europe be able to demonstrate the practical realisation of its HDTV concepts before the May 1989 meeting of CCIR Study Group 11. The technology to be demonstrated is the so-called full TV chain, which covers the broadcasters studio environment (cameras, recorders, mixers, editors, film-to-tape transfer etc), through the transmission path (satellite), to the home environment (satellite reception, TV display and cassette recorders). Progress is such that European industrialists and broadcasters are aiming to show these equipments at the prestigious International Broadcasting Convention in Brighton in September 1988.

2. THE CURRENT SITUATION

In the period since Dubrovnik the consciousness of the issues underlying HDTV has been raised throughout the world and particularly in Japan, in the US and in Europe. The stakes in this connection are much better understood now than they were then.

2.1. *THE STANDARDS ISSUE*

Despite the achievements of the European effort to date, much remains to be done before the European philosophy of compatible evolution to HDTV is accepted world wide (and in particular the most critical marketplace, the US). Much also remains to be done also before a single world standard for HDTV production is adopted.

Simply stated the production standard sets the means for the making and subsequent manipulation of the TV/or video programme. In picture quality terms it aims to rival 35mm film and in sound quality that of compact disc. It is expected that in due course HDTV will in fact replace film as the cinema medium. The adoption of a single HDTV video standard for 'film' and TV would ease (by eliminating the need for conversion between standards) the world-wide exchange of TV broadcasters' and film studios' products. This is true of course whether the technology is Japanese or European.

But the production standard is not the only consideration. The technologies of transmission, reception and display enter the equation. The Japanese transmission standard (MUSE) is designed for satellite transmission and can also be used in videocassette or disk form. Most significantly, however, MUSE is totally incompatible with current generations of TV equipment (NTSC in USA, Canada and Japan; PAL/SECAM in Europe and the rest of the world) in broadcasters' studios and viewers' homes. Furthermore, it cannot be broadcast over-the-air nor down cable channels in current bandwidth allocations. It is a truly incompatible system.

It is primarily the inability to transmit MUSE over-the-air on the standard channels that has so far blocked acceptance of the system in the USA. In that country recently the Federal Communications Commission (FCC) initiated a 2 year intensive study into all aspects of advanced television technologies but with the principal guideline of seeking service solutions which are 'in the public interest'.

From the evidence before the FCC so far it is apparent that the major TV networks, the many hundreds of independent local TV stations and their respective trade associations are testifying to the importance to them of the compatible approach to HDTV. In the case of the US however it is compatibility with NTSC that is sought and compatibility with existing channel bandwidths. The FCC is central to the debate in the US because it regulates the use of radio spectrum there. The FCC must now arbitrate between two competing proposals for the same (scarce) spectrum - mobile communications on the one hand and HDTV on the other. The allocation of this spectrum is now blocked, pending the outcome of the FCC HDTV Inquiry.

In Europe the HD-MAC HDTV transmission standard will be compatible with the (then) installed base of MAC/packet family equipment and thus with the older base of PAL/SECAM equipment. This means that viewers with MAC sets (or PAL/SECAM sets capable of receiving MAC transmissions), will be able to receive and display HD-MAC transmissions but of course without the added high definition features. This is analogous to the introduction of colour TV 20-30 years ago. It is worth noting, however, that the MAC/packet Directive is aimed specifically at DBS satellite services and as in the USA MAC and HD-MAC cannot be transmitted over-the-air within current broadcast bandwidth allocations.

2.2. *TELEVISION BY SATELLITE*

The Japanese already offer direct-to-home television service by DBS satellite but in a limited way. Planning is well advanced for the introduction of HDTV, by the next DBS satellite, which should be available in 1990. NHK will offer 2 services and a private commercial station will run a third service.

DBS is seen to be of much less interest by the US where there is a high penetration achieved by cable (50% of TV homes), which are served by a host of low-power telecoms satellites. Nevertheless, the opportunity does exist for early entry to the HDTV market by either a major cable channel/programme provider acting alone or in concert with multiple cable network operators.

For Europe the 20 or so satellite-delivered TV channels currently operating do so using a number of low-power EUTELSAT and INTELSAT telecoms satellites. They operate in PAL/SECAM depending on country of origin of transmission. Low-power effectively limits them to audiences served by Europe's still small and geographically unevenly distributed cable networks.

Europe's first high-power DBS satellite, the German TV-SAT, is unfortunately a write-off following a solar array problem. The French TDF1, is scheduled for late 1988. The British DBS venture should be operational in late 1989. Both together will only provide a maximum of seven channels. Other countries' plans for DBS are less well developed.

Luxembourg's Astra and EUTELSAT's series II satellites aim to satisfy the need to provide a direct-to-home capability to expand audience potential beyond the cable market. Both offer medium-power but with the benefit over the DBS satellites of having many more TV channels per satellite (16 compared to maximum 5). Astra is planned to be in service at the end of 1988. EUTELSAT II satellites should be operational in the early 1990s. Decisions on which TV standard(s) (PAL/SECAM or MAC/Packet) are to be adopted remain to be taken.

The introduction of HDTV demands the availability of MAC-based satellite channels. It is therefore important for the success of this introduction that medium power satellites operate in MAC.

3. ISSUES TO BE ADDRESSED

Given the advances that have been made and given the heightened appreciation of the stakes involved it is appropriate to reassess the issues underlying HDTV with a view to identifying what new initiatives Europe should be taking to advance its interests in the field.

Three crucial issues which require new initiatives or the substantial reinforcement of existing initiatives are brought before the Council at this time.

3.1. *PROMOTION*

It will be insufficient to win the technology battle in Europe. It may even be insufficient to win the standards battle. Audiovisual equipment is purchased freely in the market place and increasingly even the providers of audiovisual services respond to market forces. The European approach to HDTV must therefore be solid - finally of course in the market place, but before that to the market influencers - those financial, media professionals and influential political figures whose endorsement will be crucial to success.

The introduction of HDTV in Japan is receiving strong support from the government. The Ministry for Posts and Telecommunications, organizes there the promotion of the system, to :

- a) increase public understanding of HDTV (Seoul Olympics to be shown on 200 sets at 50 locations throughout Japan, etc.);
- b) promote satellite broadcasting by encouraging people to buy reception equipment;
- c) promote HDTV use in urban areas by financing pilot projects in 10 Japanese cities.

A combination of incentives, from interest free loans, investments and tax concessions, totalling more than 100 billion yen (about 750 million ECUs) are planned for the development of HDTV facilities in large theatres, HDTV broadcast facilities, providing a satellite channel, installations of reception equipment, the leasing of production equipment, the production of programmes, the setting-up of programme libraries, etc.

Promotion activities in Europe are very small by comparison and the imbalance will have to be addressed urgently if the momentum being achieved by the success on the research and development effort is to be translated into market success.

An adequate promotion campaign - the costs of which could be very substantial - could for example include :

- a comprehensive demonstration schedule;
- a substantial presence at relevant exhibitions;
- high quality literature;
- coordinated and systematic lobbying of key decision makers and influencers in Europe, in Japan, the United States and certain other relevant locations.

3.2. *HDTV PROGRAMMES*

The availability of HDTV equipment on the market will not be sufficient to ensure that it is bought - even if this equipment is technically excellent and sold at an attractive price. The TV programmes and films to go with this equipment is what the consumer is ultimately purchasing. Yet HDTV equipment is likely to be expensive - at least in the introduction period. Consumers will be reluctant to commit the necessary expenditure unless they can be assured that sufficient TV programmes and films which they enjoy seeing will be available in the new standard.

Japan is investing significantly in HDTV programmes already. Europe needs to make a very substantial effort in this area in the immediate future

3.3. *THE INTRODUCTION OF HDTV SERVICES*

Japan, the USA and Europe are in agreement, at least in principle, over the absolute requirement for standards if any new HDTV technology is to take off. Standards are the pre-requisite to economies of scale in manufacture and consequent consumer confidence in the decision to purchase. They differ in their approach to introducing HDTV services. Europe and Japan share the view that HDTV is DBS satellite dependent - whilst the USA is pre-occupied with seeking over-the-air solutions for advanced TV (which will not have HDTV quality in the short term).

Only Japan has firm plans to introduce HDTV services and whatever happens in the rest of the world Japan will launch HDTV services over satellite in a planned way starting in the early 1990's.

The situation in the USA and Europe is quite different. In the USA, none of the major networks have plans for DBS. It is likely therefore that a major satellite-to-cable channel provider will take the lead. Due to the limitations of the terrestrial frequency allocations there is a perceived need for finding a broadcasting format to suit the available channels.

No plans to introduce HDTV services have been announced in Europe yet. The debate over TV delivery via high-power or medium-power satellite will undoubtedly continue over the next few years. There is no discussion in Europe concerning terrestrial delivery of HDTV.

4. CONCLUSIONS AND RECOMMENDATIONS

The interrelationships between the different elements of the audiovisual industry make the whole system very sensitive to anything that takes place in any one part of it. In particular, for HDTV to succeed the equipment, programming and broadcasting aspects must each succeed together, which will require a concerted effort by the consumer electronics industry, the TV network operators and the programme producers.

The introduction of HDTV requires a clear decision at European level, on a single standard. This may require, at an appropriate time, a Community Directive.

The successful commercial introduction of HDTV on the world market will require major promotion efforts - equivalent to or greater than the original research effort.

The availability of high quality programming in sufficient volumes will also be a necessary condition of success.

A well planned and well coordinated introduction strategy is urgently required, taking into account all means involved and all distribution channels (satellites, cable, terrestrial, video cassettes, discs,....).

The Council is therefore invited:

- to note with satisfaction the considerable success achieved to date by European industry cooperating in the framework of the Eureka 95 project, in : defining a philosophy for compatible evolution to HDTV; identifying parameters for an HDTV system which would be installed in a European environment and in the world at large, and on the development of prototype equipment to implement such a system.
- to note that considerable resources will be required to promote the resulting European system at world level and that the Commission will make proposals in this connection in due course;
- to note that the successful launch of HDTV services in Europe will require the availability of a significant pool of professional expertise capable of providing high quality HDTV programming and that such expertise needs to be developed;
- to note that the Commission will continue and reinforce its coordinating role - through the European HDTV Forum - to ensure the adequate dissemination of information on these matters to all interested parties throughout the Community and to ensure the preparation of agreed Community positions in the international standardization process;
- to note that MAC-based satellite TV channels with adequate geographical coverage will be absolutely required for the successful introduction of HDTV services in Europe and that, in addition to the planned high-power DBS satellites, it would be desirable in this connection if future medium-power satellites (which are not covered by the MAC/packet Directive) would nevertheless employ an appropriate member of the MAC/packet family;
- to note that the Commission will investigate - through discussions with the principal actors in the field (broadcasters, industry and government representatives) and through the commissioning of any necessary studies - the requirement for the preparation of a coordinated planning process for the introduction at an early date of HDTV services in Europe.