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CABLE & SATELLITE: FRAMEWORK FOR A NEW INDUSTRY

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SUMMARY

Satellites and cable systems form a natural technological base for a nationwide interconnected broadband network. An organizational concept to bring such a network into being does not exist, but initiatives have already been taken which could bring about a new multi-service telecommunications structure based on the knowledge and experience of the present industry. Conditions in the regulatory, economic and technological areas appear to be favorable to such a development.

The concept of a cable network is enhanced by the two fundamental advantages of satellite distribution, which are insensitivity to the distance factor and simultaneous coverage of all receiving points located within the area of visibility. The viewable area from the bird is approximately one-third of the earth's surface. The antenna can be designed to cover a continent, a single time zone, a smaller area such as Puerto Rico or Hawaii by spot beam, or several such areas simultaneously.

Use of domestic satellites is proposed for TV distribution, cable system interconnection, private line service, data traffic, facsimile including electronic mail delivery and many other services not now accommodated by the point-to-point and switched message networks.

The primary reasons behind satellite usage in these modes are operational economy, high quality of signal, fewer terrestrial problems, flexibility of use and capability for expansion of services at declining costs.

Institutional arrangements in domestic satellite service are as yet undefined, and access is relatively open to both space and ground environment, as compared with the international satellite system which is, by law, carrier-configured.

The integration of high-capacity cable communications service with the fundamental advantages of satellite distribution requires a comparatively low cost but highly flexible earth receiving station, such as was first demonstrated at the 1973 NCTA Convention in Anaheim, California. This station, built by Scientific-Atlanta to specifications supplied by TelePrompter, was used to demonstrate long-haul satellite relay in the first SpaceCast[sm] program. Although this was a point-to-point transmission and thus not unique, it was an historic first United States' use of satellite technology for a domestic TV program communication. It was also a first in the association of a cable-originated program with a satellite carrier, American Satellite Corporation, and in the reception of signal through a cable-owned earth station interconnecting with local cable systems.

The first-generation domestic satellite facility that seems to be emerging in 1974-75 consists of a carrier-owned-and-operated satellite accessed through carrier-owned-and-operated transmit and receive stations which will be located in the pattern New York - Los Angeles - Chicago - Dallas - Washington - San Francisco - Seattle - Atlanta.

Cable interface with these facilities would occur at receive-only earth stations located at or near system head-ends. It has been estimated that for the immediate future between 80 and 100 earth stations in combination with regional terrestrial microwave systems could

interconnect cable systems serving 50% of the present CATV market.

The satellite frequencies to be used in the present and immediate future are those shared with terrestrial microwave in the 4 and 6 Ghz bands. Later on the 6 Ghz band may be displaced by the 14 Ghz band for transmission to the satellite, thus eliminating present interference problems. Down-link transmission, continuing at 4 Ghz, would not materially change the configuration of the proven 'bird' design, would retain the propagation advantage of this lower frequency and would protect the investment of receive station pioneers.

Cable's immediate need is for distribution of special interest programming which in turn requires the economic characteristics of satellite distribution to become attractive to advertisers. The audience for this type of programming will become a viable market through the cumulative process, or incremental build-up of small audience segments. Whether these segments are reached in larger population centers or in rural areas, the satellite sees them all at a uniform, one-time space cost. Indeed the satellite alone makes attainable the concept of a large national cumulative audience for special interest program material.

A brief review of a typical satellite carrier rate structure reveals why this is so. A one-hour satellite transmission from New York to Los Angeles, on a point-to-point basis, for a full color video channel with two 4Khz audio channels, including up-link, down-link and space segment, costs between $725 for off-peak hours and $1450 for prime - time - scheduled service.

For a point-to-many-points service, the expected CATV pattern of usage, the same charges would be made by the carrier, including a down-link charge only where the carrier itself owned the receiving station. No charge at all is made for reception at cable-owned receive-only stations, regardless of number. Thus the carrier charge for satellite service, including transmission, could be subdivided by as many receive-only stations as would be in operation, a number eventually in the thousands, for the cable industry alone. The cost of reaching cable subscribers in this way with marketable special interest programs begins to shrink to manageable proportions.

A reasonable estimate for the near future would suggest that a cable - satellite network could be constructed wherein strategic placement of eighty earth stations in combination with existing terrestrial facilities would serve cable systems reaching some 4 1/2 million subscriber homes. Satellite transmission, or up-link plus space segment costs, would be about $1,200,000 per year for full-time usage of one transponder. No charge is made in this model, for reception at cable-owned earth stations. The earth stations themselves are estimated to cost $70,000 each, but this amortizes over at least a ten year life and involves low operating costs.

With these figures to build on, and including ongoing distribution costs from the 80 earth stations, the costs to the cable system operator for participation in such a network average out to approximately 10¢ per subscriber home or about 4¢ per potential viewer per month.

The earth stations are expected to be capable of use for more than TV alone. With minimal upkeep and operational cost and a ten-year lifetime they represent a modest investment in facilities that will stimulate new subscribership as well as provide additional revenues from ancillary services.

It would seem at least reasonable to expect that the economics of this distribution method would support the special interest, cumulative audience concept as well as time division multiplexed digital services which have been advanced as cable's great promise for the future.

Will the public respond to such an alternative program service? Projections and theories have been offered, but nobody really knows. Meanwhile at least one group is proceeding to action in this field, rather than meditation. Westport Broadcasting, of Kansas City, has organized an interconnected cable-only program service to begin on May 1, 1974. The approximate dimensions of the venture show a 12-state area, some 300 cable systems belonging to various MSO's, over 800,000 subscribers and a program schedule of 10 hours a day without movies. The service has sold itself and is spreading. National advertisers have signed on, and systems can sell protected local spots as part of the arrangement.

Here is a starting point for a national cable service that will include program, sales, traffic and affiliate activities. As an outgrowth of a straight UHF operation it may show how the broadcasting industry will profit, hedge and expand in partnership with cable rather than in opposition to it. Indeed, the broadcasters, with proven expertise and facilities for program production are the most likely source of programming for cable distribution.

Should Westport install or feed a satellite transmitter, its cable program service would become available to the entire country over RCA, Western Union or Amsat space facilities. There are several letters of intent from cable systems now in the hands of earth station manufacturers awaiting this event. Equally feasible would be the use of a satellite receiver at the center of the Kansas City network for the reception of supplementary program material and other services from east or west coast origination points where transmittal facilities already exist.

In addition to this venture there is also the nucleus of an industry-wide organization which could complement and broaden the Kansas City regional network. This is the so-called Cable Satellite Access Entity, a group of 32 MSO's, independents, manufacturers and others who have commissioned Booz-Allen&Hamilton to document the opportunities of cable interconnection by satellite. The consortium, if it becomes operational, could provide the immediate vehicle for expansion of a regional network to national dimensions and multi-service marketing. It could also provide the base for an earth station - leasing venture which need not be limited to cable but could serve independent broadcasting stations as an interconnect, a concept which was recently exposed at the INTV Convention at Dallas.

Whether a cable system or other entity leases or owns an earth station, access thereto by law must be completely free of restriction. From the cable point of view, the economic advantage in owning an earth station is appealing. Linked up with the community cable delivery system, it may rapidly become the most logical and effective means for the distribution of broadband communications.

The carrier backbone satellite system contemplates that major send - receive stations will be owned and operated by the carrier which owns and operates the spacecraft. It does not seem likely, for a few years at least, that the broadcast industry or the cable industry will be interested in a satellite dedicated to a particular need or service. But both broadcaster and cablecaster have an identifiable interest in maintaining contact with their customers. In the broadcaster's case this contact might eventually be the rooftop microwave dish aimed at a direct broadcast satellite. We will see this in undeveloped countries perhaps before we see it in this country, for obvious reasons. But the cablecaster, with direct access to his subscriber, needs to control the gateway to his service which is represented by the receive station associated with his head-end. This is not only legal, but common sense as well. The incentives for provision of earth station services are as many as there are revenue-producing services which may be offered. The ownership of earth stations while not limited by law would seem logically to fall to the entity providing service to the ultimate user who is, of course, the cable subscriber.

The question might then arise, is cable system ownership of multi-channel receive-only earth stations a common carrier function, in view of FCC rules encouraging leasing of channels and non-video services which cable can provide?

The definition of the cable-system operation of a network reception point, the earth station, really turns on the larger question of the existence and function of a cable network, regardless of who provides the satellite or other means of interconnection.

A cable network may be divisible into separate and distinct functions. It is well to specify the sense in which the word network is used, as the implication of a broadcast network organization as it exists today may not apply.

A cable network could be carrying programs as a leased channel service; the programmer would be leasing channels for this purpose, and the network as the lessor organization would presumably be out leasing other channels for any purpose to whatever markets and for whatsoever services a customer desired.

However, cable systems, regionally or nationally, might wish to program themselves, in which case their activities would resemble those of any small conventional network, except that their revenue sources would include subscriber growth and possibly interconnected pay-TV channels as well as advertising. Mr. Whitehead suggests, in his recent report, that while control over facilities and program should be separated, the cable industry might be encouraged to program one or two of the many channels available. This certainly would not exclude a satellite network channel or channels or the ability of a cable operator to pick and choose available satellite programming for his own channel distribution. Nor is a cable programming network prohibited by any existing regulations. It might even be encouraged by a broad interpretation of the Commission's thrust toward cable program origination.

But a cable program network and a leased channel network are two concepts separated by a single lack - that of an organization that could do both, or either. When it becomes necessary to define cable's status, will it continue under present rules or will it be a common carrier, specialized carrier, non-carrier or some combination of all three? It will be necessary to include in the definition the function of networking on a national multi-channel basis. There will have to be an identifiable industry-wide body of some sort to which responsibility could attach. If a common carrier structure emerges, there must be someone to contact for leasing a channel for a marketing pattern that suits your purposes. If a client decides to conduct a program and sales operation on a network scale, the geographic preserves of single MSO's must give way to an organization capable of representing many - an organization which today does not exist.

That such an organization should exist is accepted by many as inevitable. Whether it should come into being as a new profit-oriented corporation or as an industry-sponsored consortium which contributes the administrative, operational and technical know-how, is an interesting question. It amounts to the imposition of a new technology on an old establishment.

Public and regulatory policy has seen to it that the expansion of cable need not be at the expense of familiar and vested interests. At the same time policy is moving toward cable expansion freed from some of the present establishment restrictions. Freedom of viewer choice and availability of low cost communications services may not only be necessary but may stimulate established facilities to greater service and expanded business. Naturally some interests feel threatned, but if cable does not organize as an industry, it poses its main threat to itself.

As soon as it is clearly recognized that an operational entity, having a specific operational mission for the industry, in contrast with the general responsibilities of a trade association, is a feasible organization, the cable industry will be in a position to deal from strength in the various readjustments that are now impending. Such an entity, foreshadowed in events that have been mentioned, would owe its cohesion to the glue that holds our form of society together, the profit motive. For the prospects of a multi-service national broadband communications network for this country are real, and differ, in an order of magnitude, from the limited structure of today. It remains for those who see these prospects to bring them to fruition. History may well record that 1974 was the year when the cable industry realized these possibilities and took the necessary steps to provide the best administrative and creative environment for them.