

network or equivalent syndicated programming. Completion times for full conversion to HDTV local origination are expected by the owners (and by CBS) to take significantly longer. These expectations are in substantial agreement with the times determined by the Working Party to be required to complete the various tasks if all tasks are accomplished in the minimum possible times. It should be noted that singly-owned stations were not included in the survey.

The CBS study shows the first 30 stations, located in the top 10 markets, completing the "pass through" stage in the first year. IS/WP-2's work indicates this to be somewhat optimistic. If all tasks, including governmental approvals, are accomplished in minimum feasible times, approximately 1½ years are needed to get on the air if tower space is available and approximately 2¼ years if a new tower must be built. Since the tasks include local government approvals, environmental impact statements for new towers, FCC construction permits, and the like, it is not anticipated that the minimum times (assumed to be 90 days per approval) are likely to be achieved in many markets. We believe more normal zoning, planning, and environmental approval times will result in "pass through" implementation times of 2¼ years without a tower and 3½ years with a tower. In some major markets, even longer governmental approval times are likely to be encountered. The work of the Local Area Groups (chief engineers of all stations in an area), enlisted by IS/WP-2 in five major cities, determined in four of them that adequate tower space is not currently available for HDTV transmission. The very fact of our inquiry has stimulated the chief engineers in several of these communities to look further into the problems they will face and to begin identifying possible solutions to them.

The staggering of conversions anticipated by both CBS and the group owners surveyed (even with their assumptions about conversion time) results in approximately 50 per cent of the stations reaching "pass through" after five years. CBS indicates that most of the stations converting after the first five years will be smaller stations, many in smaller markets.

It must be recognized that the time at which stations receive uncontested channel assignments is the starting point for calculating the various time aspects of the transition to HDTV. It is anticipated that the FCC will make channel assignments during the process of establishing the rules for HDTV service. If the channel assignments are made later, the time taken to make the assignments will add directly to the implementation time. Similar consideration must be given to the documentation and dissemination of the technical details of the selected system sufficient for manufacture of both broadcast and consumer equipment, or a similar addition to the implementation time will be required.

Manpower Resources to Accomplish Conversion

One area which the Working Party has been exploring is the availability of qualified personnel to carry out the design work required to implement the conversion to HDTV. This concerns two distinct aspects of design - transmission facilities and studio or production facilities. The survey of group owners showed that there is a small resource available from headquarters operations of some to supplement the personnel at the stations in designing the new facilities. In addition, some owners may be able to provide some assistance to the stations by moving personnel between their operations on a temporary basis to carry out the conversions. This reinforces the need to have some stations convert later in order to help others convert sooner. Assuming such staging of stations, adequate personnel seem to be available to reach the "pass through" stage

in the time frames discussed above, especially if vendors and consultants can pick up a significant part of the transmitter work effort.

The personnel requirements are far more acute for the studio conversion for local origination than for the transmitter and studio "pass through." This results from the fact that the studio conversion represents a much greater change and a much greater expenditure. It is also likely to take considerably longer to achieve because of the magnitude of the conversion required.

Consumer Electronics

Another aspect of the Working Party's effort has been to investigate the time expected for consumer electronics manufacturers to begin production and sales of receivers compatible with the new transmission system. IS/WP-2 has consulted with receiver manufacturers and developed a time schedule, reflected in PERT charts and timelines, for the development and introduction of television receivers. The current estimates is that it will take approximately 3½ years from the time that adequate information for product design becomes available to the manufacturers for product to begin entering the distribution chain. Separately, PS/WP-5 has made forecasts of the penetration over time of HDTV receivers in the marketplace.

When considering time forecasts for implementation, the starting point for system-specific equipment design is the availability of adequate technical information. The first major task in the implementation is the design of products and their introduction into the marketplace. Translating the penetration data developed for HDTV receivers by PS/WP-5 into this context is necessary before actual dates can be applied to the penetration forecast. The penetration forecast currently starts with 1 per cent penetration of HDTV sets and extends to between 5 and 10 per cent 5 years later. Working backwards, an optimistic estimate by PS/WP-5 is that 1 per cent may be reached two years after product introduction, depending solely on cable and rental tape as program sources. The work of IS/WP-2 on the timing of receiver development indicates that receivers may be generally introduced approximately 2½-3 years after the FCC Report and Order, provided full technical information is available at the time of the NPRM. Some believe that the successful proponent may, in some cases, have a small time advantage. This indicates that 1 per cent penetration may be reached 4 to 5 years following the FCC Order.

Availability of Technical Information

Time will be required to develop a description of the selected system sufficiently complete to permit the design and manufacture of consumer electronics and professional equipment products. The information currently being provided to the Advisory Committee through SS/WP-1 is not sufficient for such a purpose. Expectations with respect to and a mechanism to accomplish dissemination of the required information are yet to be determined.

Details to support the discussion above and information regarding other work of the Working Party are available upon request.

b. If tasks should be added, please briefly describe the tasks and indicate the tasks that precede and follow them by task number.

c. If tasks should be deleted, please indicate the task numbers:

d. If tasks should be modified, please give the task number and briefly describe the changes required.

2. Do you agree with the durations given for the tasks? Yes No

a. If "No," which task numbers should be changed and what durations should they have?

3. Do you agree with the assumptions given? Yes No

a. If "No," what assumptions should be added? Which should be deleted? Which should be changed and how?

4. What can be done to shorten the time to production? Consider both the tasks themselves and any external factors or assumptions that might impact the development time.

5. If your company also manufactures VCRs, would the development process and timing be about the same as for television receivers? Yes No

a. If "No," how would they be different? What factors might influence the difference?

b. What can be done to shorten the time to production for VCRs?

Please return this questionnaire no later than Friday, February 21, 1992. Thank You!

28 JAN 92

FCC Advisory Committee on Advanced Television Service
Implementation Subcommittee
Working Party 2 on Transition Scenarios (IS/WP-2)

To: Members of EIA R-4 Committee

From: S. Merrill Weiss, Acting Chairman, IS/WP-2 (ML)

Date: January 22, 1992

Re: Development Process for HDTV Receivers

In carrying out its assignment to study transition scenarios for the implementation of Advanced Television in the United States, IS/WP-2 has produced a scenario for the development process for Consumer HDTV Receivers. The scenario is being used to determine the tasks required to go from a technical description of the selected system to product in the distribution channels to the marketplace. It also is being used to examine the dependencies and durations of those tasks. From this information, the time of availability of consumer product will be estimated.

The scenario for consumer receiver development has been devised by experts from several receiver manufacturers who are participants in IS/WP-2. Because of the likely widespread use and the potential sensitivity of the results of their work, IS/WP-2 is seeking wider industry input on the scenario and supporting data. It is for this reason that we are writing to the members of the EIA R-4 Committee, as the best cross-section of the consumer electronics manufacturing industry. We ask for your input through completion and return of the enclosed questionnaire.

In addition to the questionnaire, attached to this memo are copies of a set of assumptions used to develop the scenario, the PERT chart developed from the assumptions, showing the tasks and their relationships to one another, and a Gantt chart showing the timing of the activities derived from the PERT chart. We ask you to examine these before answering the questions on the form.

It is important to note that the tasks and timing are structured for a manufacturer that is not a system proponent. A proponent might have a small head start over other manufacturers. Since the transition to HDTV among consumers is taken as not beginning until there is general availability of receivers, however, the transition scenario does not concern itself with a proponent's product design and manufacturing efforts. Instead it seeks to define the development efforts of a typical receiver manufacturer, and your responses should be made with that in mind. Also, because of the eventual importance of the availability of VCRs to the acceptance of HDTV by consumers, there are some questions relating to VCRs included in the study.

If there is someone from your company other than a member of the R-4 Committee who is more appropriate to answer the questionnaire, we ask that you arrange for that person to provide your company's response. In addition, there are several companies represented on the R-4 Committee by more than one individual. In those cases, we ask that a single questionnaire be filled in fully by one person to represent that company's response. The other members of the committee from that company should nonetheless return their forms indicating the name of the individual who will respond for that company.

Thank you for your cooperation and your participation in this study. We have done our best to minimize the time it will take you to respond. Should you have any questions about the study or about how to answer our questions in a way that will provide the best information to IS/WP-2, please call Larry Cochran at Thomson Consumer Electronics, phone number (317) 267-5946. We ask that you mail your response to arrive no later than Friday, February 21, 1992.

Please send your responses to:

S. Merrill Weiss
25 Mulberry Lane
Edison, NJ 08820-2908

Once again, thank you.

FCC Advisory Committee on Advanced Television Service

Implementation Subcommittee

Working Party 2 on Transition Scenarios (IS/WP-2)

Survey of Consumer Electronics Manufacturers

Name _____

Company _____

Response will be provided by another person from this company.

Name of respondent: _____

Please examine the associated PERT and Gantt charts before answering the questions. The numbers in the blocks on the PERT chart are: the task number at the top left, the duration in days on the right side, the projected start date on the bottom left, and the projected finish date on the bottom right. The items in ellipses are milestones; they all have zero duration. The critical paths are shown as solid lines and the non-critical paths as dotted lines.

The durations shown in both the PERT and the Gantt charts are in calendar days, as opposed to work days. The durations have been adjusted to generally make events begin and end on the first, middle, or last days of a month. The bars on the Gantt chart sometimes extend slightly beyond the actual dates of their related tasks. This results from the time granularity of the computer program that generated the chart. For accurate determination of the dates, please use the PERT chart.

In answering the questions below, please remember that the study is targetted to modelling the general case of a non-proponent receiver manufacturer. Please apply what you know about your own company's development process to such a general case. If there are several products or product lines about which you could respond and for which there would be different answers, please consider the one(s) with the shortest time to market. Use the back of the page if you need more room for your answers.

1. Are the tasks shown on the PERT chart the right ones? Yes No
- a. If "No," should tasks be added, deleted, or modified? Added Deleted
(Checking any combination is allowed.) Modified

b. If tasks should be added, please briefly describe the tasks and indicate the tasks that precede and follow them by task number.

c. If tasks should be deleted, please indicate the task numbers:

d. If tasks should be modified, please give the task number and briefly describe the changes required.

2. Do you agree with the durations given for the tasks? Yes No

a. If "No," which task numbers should be changed and what durations should they have?

3. Do you agree with the assumptions given? Yes No

a. If "No," what assumptions should be added? Which should be deleted? Which should be changed and how?

4. What can be done to shorten the time to production? Consider both the tasks themselves and any external factors or assumptions that might impact the development time.

5. If your company also manufactures VCRs, would the development process and timing be about the same as for television receivers? Yes No

a. If "No," how would they be different? What factors might influence the difference?

b. What can be done to shorten the time to production for VCRs?

Please return this questionnaire no later than Friday, February 21, 1992. Thank You!