To	**Distribution**	Memo #	**GAR 9/1/90**	Date	**Sept. 1, 1990.**	
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Subject   **ATRC Digital Simulcast Steering Group Meeting Minutes - 8/31/90**

A meeting of the ATRC Digital Simulcast Steering Group was held on Friday, August 31 in Briarcliff. Attending were Will Fagot (NBC), Ron Gnidziejko (NBC), Caaj Greebe (NAP), Uwe Kraus (TCE), Glenn Reitmeier (Sarnoff) and Mike Tsinberg (NAP). The meeting began with a discussion of the FCC News Release explaining the Commission's ATV Position, dated August 28 (see attached). In it is mentioned the possibility "that a breakthrough development in a fully digital simulcast system may occur that would require additional development time," thus arguing for the adoption of EDTV in the interim. Another paragraph stated that the "Commission will review carefully but quickly any such new development...it will supplement the testing schedule to accomodate them." The group's concencus on the implications of the FCC statements was that we can expect serious new competition to be considered by the FCC in the 1992 time frame. This further increases the pressure for ATRC to have working hardware for a fully digital system by that time.

We then discussed the impact of such a hardware requirement on schedule and manpower. Starting with the need to have working harware in early 1992 and working backwards lead to the conclusion that hardware construction must begin no later than February 1991. Recognizing that several months will be required for hardware architecture and system design, those tasks must begin at the end of November 1990. That in turn leaves us the month of November to develop and refine a complete system proposal, using software simulations and refinement. The bottom line is that <u>we must decide upon a basic compression approach for our 1992 hardware at the end of October</u>! No one particularly liked this, but it seems that there is no viable alternative.

We also discussed longer range considerations regarding the FCC and HDTV standardization, and agreed that 1992 was not likely to be the end of the HDTV

standardization process. We therefore agreed that it was essential to keep a program in basic compression research in place, despite the need to construct hardware for 1992. This basic compression research will provide the core technology for hardware systems to be constructed in the 1995 time frame using more sophisticated approaches than are available today.

In order to accomodate the schedule for hardware development, we agreed that we must accelerate our schedule and begin to force the combination of compression approaches. Mike Tsinberg reported that he has already initiated combining the NAP approaches into a single Vector Quantization/Sub-Band Coding approach. Caaj Greebe and Uwe Kraus took the action item to have Philips LEP and TCE Hannover collaborate on a joint DCT-based proposal. Glenn Reitmeier took the action item to consolidate the Sarnoff efforts into a single approach. In order to reach a reasonable decision on compression, we will require comparative demonstrations of the three approaches by the end of October. We agreed that the approaches should be compared at two data rates (20 Mbps and 13 Mbps), which represent net video (Y and C) data rates.

We also discussed criteria for selecting a compression approach for hardware implementation, and agreed that they should include:
    1) subjective quality (including slow-motion and other VCR modes)
    2) objective quality
    3) error propagation performance
    4) hardware complexity (transmitter and receiver)
    5) availability of vital components

The present plan for RF transmission calls for testing the LER OFDM system and the Sarnoff QAM modem in October. Although testing will not be exhaustive, it should provide us with reasonable insight for our November system decision.

We discussed what HDTV production standard to adopt for our 1992 hardware. We agreed that backing 1125 was undesirable, that 525 progressive was "not HDTV", and that 1050 progressive was what we all would really like to have (but it is simply unavailable). That left us the choice of 1050 interlaced or 787.5 progressive. We all agreed that 787.5 was the preferred technical solution, but decided upon 1050 interlaced anyway, for the following reasons:
    1) we did not want to back Zenith's proposal in any way

2) 1050 is "real HDTV" (it has > 1000 lines)

3) we have a story for "1050 interlaced now, 1050 progressive for the   future" that is in line with the Europeans.

4) 1050 has the lowest pixel density and is easiest to compress

We also discussed the idea that the frequency of spatial refresh is a key technical parameter of a simulcast system, and that GI's 1 second refresh time was completely uinacceptable. We agreed that spatial refresh must occur at least as often as every 16 fields.

We estimated the resources to build hardware in 1991 to be on the order of 25 people on a full-time basis. NAP will have somewhere between 8.5 and 11.5 people available, and Sarnoff resources remain to be determined. Clearly, additional manpower and budget must be found if we are to have digital simulcast hardware in 1992.

Our planned activities for the next months include:

1) a plenary technical meeting on September 26 (at Briarcliff). We expect "compression proposals" to be presented in some detail, along with their expected strengths and weaknesses. We also expect a plan for RF activities to be presented, as well as a testing plan for comparing compression approaches in October.

2) a plenary technical meeting on October 31 and November 1 (place to be determined). We expect to hear full system proposals presented, and to see demonstrations of the three compression approaches. These demonstrations will provide the basis for deciding upon a hardware approach.

Glenn

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