

## **Critical thought processes in the development of the NW ADDE model.**

This paper attempts to provide a behind the scenes look at some of the issues and thought processes the Northwest Advanced Digital Distribution Entity (NW ADDE) design group went through to develop a framework upon which a facility design phase may begin. Some of the discussions were unique to our particular situation but the topics are likely universal to anyone who wishes to undertake a similar project.

Let it first be stated that the concept has been kept intentionally fluid with an open architecture thought process in order to allow an easy migration path for the stations requiring different entry points. Because of the number of stations participating, several key issues arose that required attention:

- Several of the stations are in the process of building out a digital plant that are designed to stand-alone.
- How do you define the scope of the project to make it attractive to all participants?
- Stations have differing levels of comfort having a “dark” master control room.
- Negotiations of cooperatives other than those initiated by discussions of ADDE were in progress.
- The stations have different numbers of transmitters under their control now ranging from one to five.
- The stations have vastly different operating budgets.
- Finding times when people could meet.

Each issue and current thinking of solutions will be addressed in more detail.

**Current Station Build-out:** Those stations which are in the process of bidding or nearing the beginning of construction of their digital plants understandably have a difficult time changing gears and thinking about a completely different way of doing business. While everyone is committed to doing business in a manner that will save money, an immediate tangible benefit needs to be recognized to get a strong buy-in by those who are already going forward on their own. The challenge was then to come up with a design that would allow the stations to continue with the plans they have underway, yet provide a phased, upgradeable path which would build and integrate the ADDE. To do this several core equipment and software similarity guidelines need to be established. The primary similarity should be the use of a common full-featured automation system. This system should be able to talk to any other stations’ system and retrieve or send desired program material. It would be beneficial once the ADDE is built, to have one database for all program material owned by individual stations. The traffic system should also be the same at all stations to enable access to a master library of programs with the proper rights and authorities system wide. Doing so would likely eliminate the need for an additional asset management layer. This is especially beneficial if a station has intellectual material or raw footage in the library that isn’t “free” for the taking.

On the equipment side, it is highly desirable to have as much networked equipment as technology allows. Network access to transmitter monitoring and control is necessary if a station chooses to have a “dark” control room during any part of the broadcast day. (A “dark”

control room means the station is running totally unattended.) In order to share program assets in a distributed mode, servers and nearline storage devices, must be networked and not require human intervention to have the media available to the requesting site. It is also desirable to have the same server platforms system wide to insure file compatibility from station to station and at the ADDE. Similar automation systems are essential to insure that system control can be transferred between facilities, reduce operational complexity and staff training requirements.

**Scope of the Project:** Each station group had different ideas of what makes this project exciting and “useful” to their operation. Some stations simply wanted to relieve themselves of the day-to-day master control operations in order to put the money saved towards a match for transmission equipment and others wanted to build a massive data center to house all the program material and feed the transmitters directly with multiple program and data streams. The current thinking is to build a system that would take advantage of current build-out plans. We divided the stations into several clusters based upon several factors. One of those factors was geographic proximity and another was based upon operational cooperation discussions that were already underway. Those stations, which are building out master control facilities, would become the nodes for their respective clusters. The nodes would be tied together enabling the group to share resources in place at the nodes. This approach takes advantage of the physical assets that will be in place in the very near future at these stations. As the need to expand those assets arrives, the ADDE data center should be built. It may coincide with the roll out of a new PBS distribution model under consideration at this time. The ADDE data center would be the main distribution point for all programming for the cluster nodes. Additional ADDE data centers could be built nationwide, connected via high-speed data lines and satellite enabling a very robust SAN type architecture for storage and distribution of program and raw material.

**Comfort with Dark Control Rooms:** The major market stations were most resistant to the concept of having a dark facility. The primary reason for not being dark however was their operations have sufficient activity to require 24 hour staffing at the facility. Those stations are generally also the ones that are building out their digital facilities now. The cluster stations benefit by having the ability to expand their operations with out having to increase personnel and hardware. In many cases, the cluster stations’ reliance on the nodes, addresses the difference between having the ability to expand services and not doing anything at all. The nodes benefit by fully utilizing the personnel trained to provide master control operations without diluting their responsibilities and training with other “duties as assigned”. As a result, a higher quality air product is achieved with less personnel than would be required to provide these services at each location.

**Other pending negotiations:** Several of the stations in the group had begun talks of cooperation to different degrees with other stations prior to discussion of building an ADDE. These talks ranged from simple sharing of program information to assumption of control of the entire operations. Two major market members for instance, were engaged in talks to connect their respective facilities to share storage and archiving resources. Our network design needed to acknowledge and incorporate these plans into a system that provides for even greater connectivity and flexibility in the future. It had been said many times by technical personnel, “either we are three years too early in our build-out or ADDE is three years too late.” Because we all understood that fully designing and funding ADDE would take several years, we had to design the ADDE as a system that would allow the stations to partake of current plans yet

attempt to insure those plans had an upgrade path to ADDE. The ADDE had to be designed so the stations could enter at different times if necessary, with different needs, and have individual levels of participation.

**Transmitter control:** Initially when we did our pie in the sky needs (read “wants”) assessment we found it to be highly desirable for the ADDE to provide programming directly to the transmitters bypassing the station location. This would be advantageous for several reasons not the least of which is to eliminate the need to replace current STL/TSL equipment. Since all but one partner has multiple transmitters and two partners have 5, it would also allow discrete localized program streams to be sent to each location, which is currently not possible with current microwave routing and capacity. It was determined that because of the rural nature and the lack of fiber connectivity to the vicinity of most of the transmitter locations that a conventional type STL/TSL system would be utilized at first. The ADDE therefore would have connectivity to the station locations only and not the transmitters.

Another item of concern was that the stations differed in their level of comfort allowing another facility to have control of their transmitters. The system needs to be designed to accommodate those who simply wish to have transmitter-monitoring functions performed in addition to full transmitter control. Some of the level of comfort issues revealed during this project will change as time goes on, I suspect.

**Operating Budgets:** The goal of the entire project was to reduce operating costs for all stations and make it possible for the smaller stations to survive. Most of the stations in our group are in different size markets and have very different operation budgets. Some of the stations are vastly different in terms of space, maintenance and operations budgets, age and quantity of equipment, number of personnel, and mission. The design is sensitive to the desire of the smaller stations to survive the digital transition. The larger stations rather than assume the take-over stance, have assumed the role of the big brother (not in the political sense!) and have worked to insure the survivability of the smaller stations. Removing the threat from take-over helped to promote cooperation among all the stations. Throughout the process, it was vitally important to insure all the stations retain their autonomy with total control of the selection of their air content and format.

It was of course important to keep the cost of participation lower than the cost of doing business “as usual.” The cost savings will be realized more in future costs than as drastic reductions in current operating costs. The cost savings are compounded when multicasting. It was easy to demonstrate that if you currently run two transmitters in two cities with two NTSC program streams, the cost of operation dramatically increases when later you provide four SD DTV streams plus data *and* your NTSC programs to those two cities.

Since much of the programming material is the same between all the stations in the region, some level of cooperation and consolidation of resources was deemed not only desirable but imperative. It no longer makes sense for each station to library and process identical material. Then, with the libraries consolidated, it makes sense to consolidate much of the operations as well.

**Meeting Times:** Because of the fact that most stations have already down sized staff as much as they can stomach, finding times that the principal parties could meet was extremely difficult. It was found when there was a long time between meetings; we spent a lot of time at the next meeting rehashing things that were settled at the previous meeting. That issue was compounded

when several members were unable to attend a meeting. Additional time was then necessary to bring everyone up to speed, which tended to re-open the issues for debate. A regular meeting schedule and a means to determine which issues are settled and which will be revisited should be in place at the *beginning* of the process. The better the meetings are facilitated, and the more frequently the meetings occur, the quicker the process will produce results. However, those are issues of group dynamics to which I claim no particular expertise.

**Summary:** So where are we? We have developed a network design that we believe to be universal to any group of stations in the country. It employs a new look at distribution methods that should take television into the next generation. The model works for the current “push” technology that we now use for program distribution. The push technology is used from the origination of our feeds from PBS all the way to our viewers. Simply put, the programs are there when we put them there and that is it. As we go forward, the likely migration to a “pull” method of distribution is fully supported by this model. Stations can request a feed or “pull” it from PBS or ADDE when the station needs it. Just the same, viewers can pull a non-broadcast feed from the stations’ data channels at their convenience. All the applications and implications of that though, are beyond the scope of this paper.

It is anticipated that within the next several weeks, the functionality issues at each of the network nodes will be determined which will permit finalizing the business plan.

On the next page you will see a slide of the physical layout of the Northwest ADDE participating partners. The next slide in the presentation shows systematically how the logical network is designed. This is at the macro block level and at this time doesn’t address bandwidth or equipment.

Double Click the slide below to begin the PowerPoint session.

## Advanced Digital Distribution Entity (ADDE) Northwest Participating Station Physical Map

