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# DIGITAL TV: DATACASTING

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**Courtesy of:** Extron Electronics, Inc.



Considering the five basic sections of the ATSC standard, Video Systems Characteristics, Audio Systems Characteristics, Service Multiplex and Transport Systems Characteristics, RF/Transmission Systems Characteristics, and Receiver Characteristics (informative), the most crucial to most of us are the details of the video and audio sections...what we expect and how we can use it. But, there is much more power available within this new standard which will have significant impact on projects utilizing digital television and new business opportunities as well.

There is no doubt that digital television will deliver the one HDTV channel or up to four standard definition programs simultaneously with 5.1 channels of surround audio. It is expected that early display systems, or receivers, introduced into the market will demonstrate the essence of the standard in that regard. It is believed that HDTV along with high performance audio will lead the way into the public's acceptance of this new transmission medium. But, there is much more to the standard than meets the eye.

Remember, the new television standard is really a digital data transmission format with features that support the high data rates required to deliver high performance moving imagery. The beauty of the system is that it has broad capacity to handle extremely large amounts of data over wired and wireless transmission schemes. Channel allocations by the FCC constrain the standard for use with television over the airways while transmission over cable is a completely separate matter with many opportunities. Hiding among the

basic advantages, regardless of transmission method, is another form of communication that will become prevalent in tomorrow's high definition world-datacasting!

Datacasting can have several meanings at this time. Currently, in the NTSC system it refers to the transmission of data via the first three or four TV lines at the top of the screen. The most common example of this is the automatic clock setting information transmitted for VCR's equipped with the feature to decode it. The DTV standard contains significant space for ancillary data already. But, broadcasters may elect to use one of the four possible programming sub-channels to transmit mountains of data. This would be something like the current downlink satellite feeds that allow internet users to make queries via phone lines and receive downloads at high speed via cable modem. The DTV standard, depending on programming activity, will allow up to 20Mbps transmissions to a wide group of customers simultaneously. This is hundreds of times faster than a current ISDN line. So, how would one receive such data?

Currently, it is assumed that TV set makers will utilize DTV decoder systems that provide for the reception of, or connection to, extra data. The set top box is an obvious choice, although some key industry manufacturers feel the consumer will wait to see the impact of HDTV as a viewing experience before investing in additional digital hardware. If history is a good teacher, the adoption of HDTV capable TV sets alone will take a significant amount of time. Perhaps it will not require nearly ten years as did color television, but a few years seems like a marketing eternity in this age.

There is no doubt that the future of data broadcasting will take on interesting proportions. Some believe the personal computer will become the focal point platform for the instant reception of datacasting. Even so, there will be some time required for broadcast and cable entities to update their equipment and identify their role in this emerging market. The PC is a logical focal point for handling the wide variety of data and formats presented within DTV. Expect the computer manufacturing community to be in the lead with adapters and devices intended to enhance their position in this new television market.

Whether your concerns are digital video, digital audio, or computer datastreams, how are you going to deal with it? There will be several points of recovery for data in the new system. Several IC manufacturers have announced plans to supply the industry with the chip sets to make decoding of all 18 video formats possible on the early TV receivers. Within

the decoding chain, there will be points where digital data may be "tapped off" before other processing occurs. Possibilities will spring up for the invention of devices to handle special processing of data. It could be that digital ports will be provided for the external decoding of information in a special way to enhance performance, much the same as line doublers and quadruplers are added ahead of projectors now.

Technically, it will be straightforward, but politically very complex. There are issues with copyrights and program content that will affect the market availability of any digitally capable conversion and transfer devices. Producers of software and program content have all the same concerns about digital copying that pervades the introduction of DVD-related products.

We can likely expect that initial introductions of DTV equipment (i.e., TV receivers) will provide the typical, decoded outputs in analog level format. For some time to come, video and audio routing of decoded data will continue to be handled at the analog baseband level. This means that existing analog distribution equipment will still be utilized for many years. To a great extent, any monitoring or testing activity related to television is left better handled with analog equipment when cost is of concern. Decoding of DTV data streams could be accomplished in a centralized location for systems requiring distribution of the information. This is particularly attractive where there is a large installed base of

high quality analog router equipment. Even in television production facilities it will make sense to utilize existing analog DAs and routers for everyday distribution and monitoring tasks. Online reception in the digital domain will only be a requirement for precise monitoring of the transmission path.

As costs subside, decoding may be decentralized to the end point of the system. Much like the microprocessor, low cost DTV decoder chip sets will flourish within a new market of low cost smart devices capable of decoding the complex data channel and providing specific performance where needed. Also, a market will open for the production of small, function specific products capable of "siphoning off" only the data relevant to their specific purpose.

There is clearly a "chicken and egg" problem here. Don't throw away your analog equipment and systems just yet though. They will still have excellent functionality and application for many years to come. Whether you believe that DTV will ride in on the personal computer or the home television set, the new standard is certainly nothing more than a digital data transmission format that just happens to support television. While our lives will continue to be influenced by the evolution and awe of this new system, it is clear that many opportunities exist in all directions. No one really knows how and in what capacity DTV will first be accepted, but it definitely holds something for everyone.