

The News Production Center of the Future

By Jon Shaw

News departments, and especially news editing, have been bypassed in the recent technology developments that have swept through the industry during the last five or six years. The last major change to take place within this environment was in the mid-1970s, with the introduction of electronic news gathering (ENG), made possible by the development of videotape cameras and linear editors. However, over the last few years we have seen a number of new systems developed for the application of television news — the digital news production center. This news production center is now the goal for many broadcasters, as it promises to fulfill their requirements for acquisition, editing, and transmission of news. An ever-increasing number of these systems are appearing in the marketplace, some of which could form part of the solution, with a few promising to provide a complete solution.

Tape has provided the means of acquisition for many years. Recent developments in disk-based cameras provide a glimpse of how it might be possible in the future for news crews to capture stories as they develop. Meanwhile, the debate continues surrounding the economics of this technology.

Individual Solutions

Acquisition

Regardless of the chosen method of acquisition, one of the major problems of the news production center must still be overcome; that is, the ability to make the material available to multiple users as quickly as possible. Currently this is achieved by duplicating tapes, but the news production center of the future can make use of a video server to fulfill this requirement. This will be discussed in a later section.

Editing

Since the introduction of ENG, news reports have always been edited in simple two-machine linear edit suites (Fig. 1), restricting the final edit to simple cut transitions. The linear suite also imposes a number of other operational restrictions on the editor; for example, the inability to quickly

change an edit point or replace a segment of video without going down a generation or rebuilding the entire edit.

The only way to improve the visual presentation of the report is to move into a three-machine suite (Fig. 2), which allows the editor to generate wipe and dissolve transitions. However, as news editing is a time-driven environment, with many reports being finished right up to the

deadline, the extra time required to produce a B roll makes the use of wipe and dissolve transitions impractical. Add to this the extra cost involved in constructing a three-machine edit suite and it quickly becomes clear that up to now the two-machine suite has been the only real option. Modern post-production editing systems could provide a solution, but once again, the costs of these systems are beyond the financial reach of most news departments.

Over the last few years we have seen an abundance of various nonlinear editing systems, mainly for off-line work. These nonlinear editing systems offer highly visual and efficient means of editing, but are highly compressed and therefore provide poor-quality output that is not up to broadcast standards.

The nature of news is such that television news departments have often accepted a lower level of picture quality from the original rushes, where the report has to be edited from the available material. Picture quality is

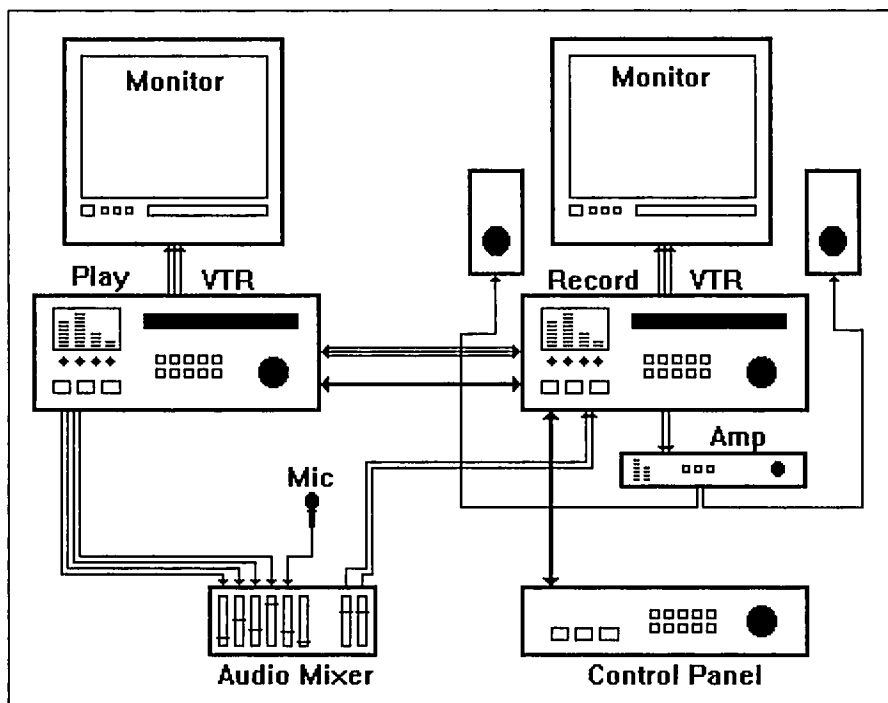


Figure 1. Two-machine edit suite.

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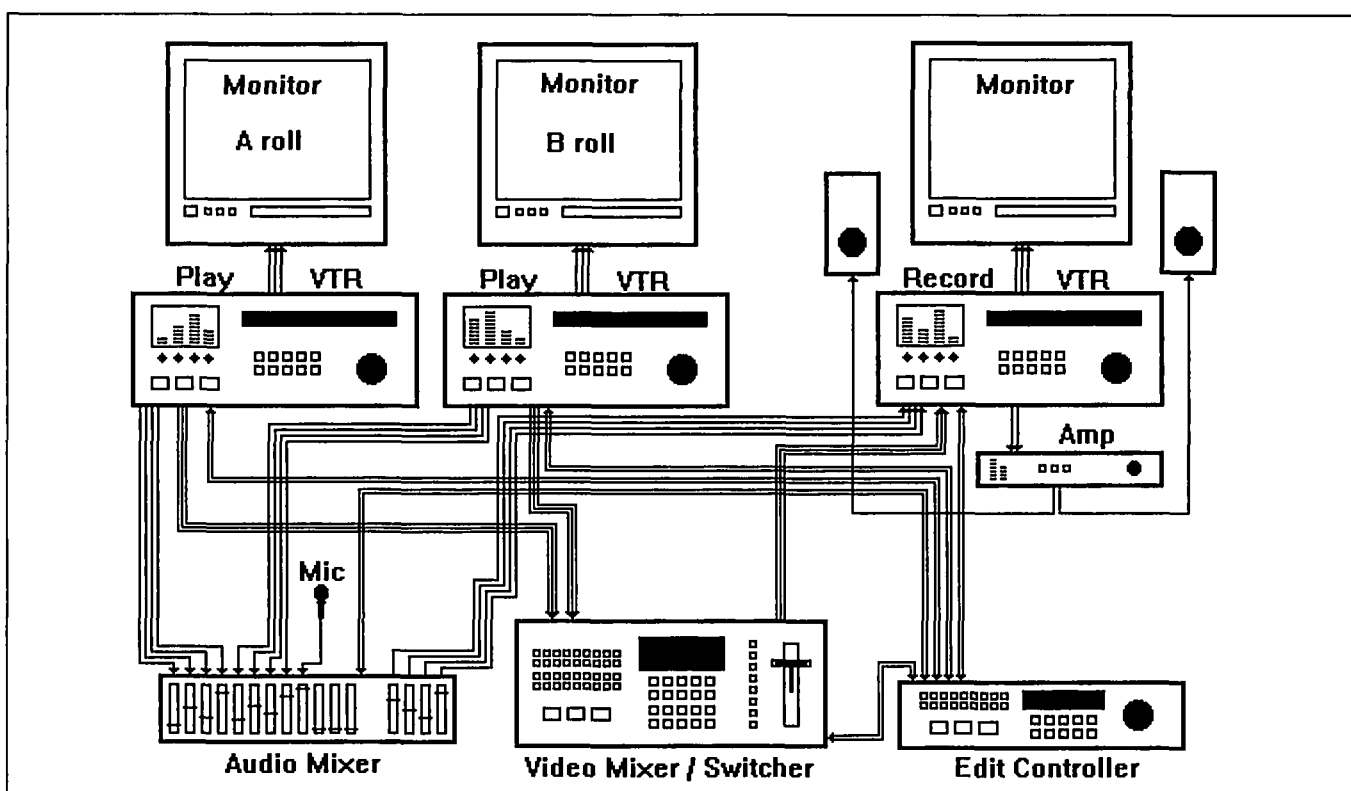


Figure 2. Three-machine edit suite.

important and should be kept at the highest possible level throughout the editing process, particularly if the quality of the source material cannot be guaranteed. The use of low compression in a nonlinear editing system can provide benefits when storage and cost are a priority and picture quality secondary. However, this should not be used as an excuse to try to place systems into news production whose quality would otherwise be considered as off-line.

With features like SCENE SELECT, which enables the editor to create a rough cut directly from tape, the nonlinear news editor (Fig. 3) has become a powerful alternative to the traditional news edit suite. The nonlinear system offers a level of functionality and flexibility that could never be available in a traditional edit suite. Wipe and dissolve transitions, and even digital video effects (DVE) moves, are all instantly available for inclusion into the news edit, eliminating the need to produce a B roll or even transferring the entire edit into an effects suite, for very little extra cost.

The uncommitted editing techniques of the nonlinear system also

allows the editor to quickly and simply change unwanted or unusable footage, insert any late-arriving material, such as interviews, or even change the running length of the report without having to rebuild the edit.

The flexibility of the system enables several versions of the report to be prepared for different bulletins simply by taking the edited piece, making the required changes, and storing the result as a new version. With news schedules notorious for last-minute changes, as well as the news itself prone to evolve while the show is on-air, this ability to quickly and easily offer new and updated versions of a story, of various lengths, is an obvious benefit.

Even with this configuration, the journalist still has limited access to the material. Currently, journalists have access to a tape viewing station, allowing them to shuttle through the rushes and select scenes prior to the tapes being sent to the edit suite. Generally, however, the story must be written without access to the material or it takes place during the edit. Upon completion, the edit is transferred back to tape for transmission to air.

Transmission

Many news programs are still played out manually from videotape recorders (VTRs). Multiple VTRs are generally used in an attempt to provide efficiency and flexibility in responding to changes. Most news stations have adopted cart machines as their playout devices. Whichever method is used, there is still no improvement in the maintenance and material costs or reliability.

Using VTRs or cart machines for transmission also has its own limitations. For example, there is no instant access to the material, as the tape has to be spooled and prerolled before transmission. This means that last-minute changes are very difficult to achieve. In fact, flexibility has to be achieved by using multiple VTRs alongside the cart machine, which in turn leads to more operational problems.

Disk-based caching devices are being developed for use as transmission devices, designed to replace the VTRs within the cart machine. However, these devices still work as an autonomous unit, and there is no real

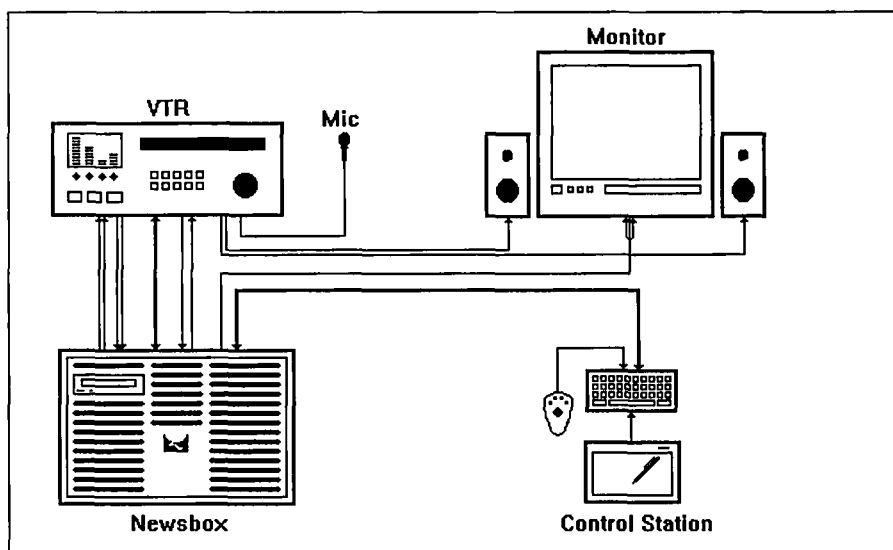


Figure 3. Newsbox nonlinear news editor.

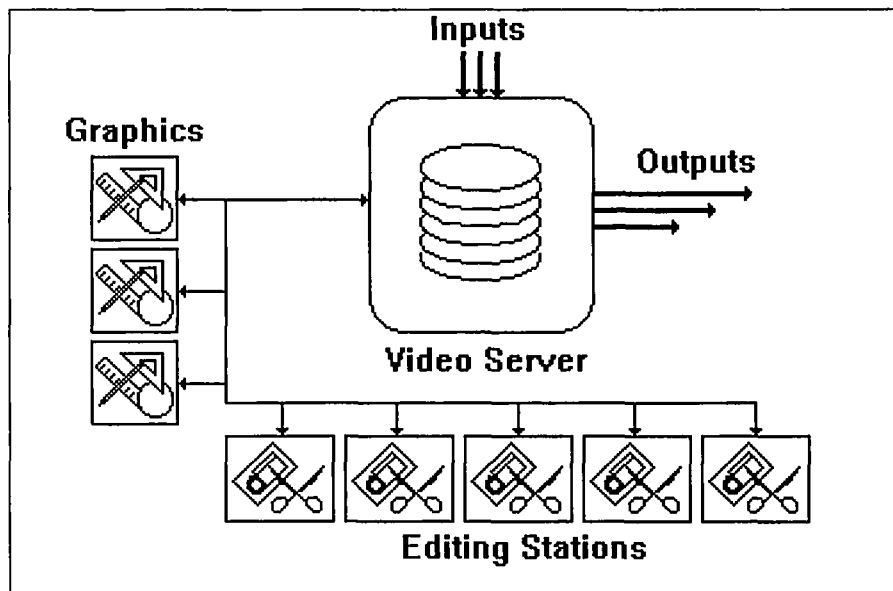


Figure 4. Networked news production center.

integration between the transition device and the edit bays. Recent technological developments have produced systems that can provide a complete solution by combining the various processes involved within the news department, from lines through editing to transmission, and integrating the journalist along the way.

Solutions

One solution would be an unlimited network of systems (Fig. 4), each with immediate access to any piece of material and all centered on a video server, from which on-air replay could take place. This network could be

expanded at will, with additional systems providing whatever functionality is needed.

The theory behind such a network is straightforward. Each of the systems on the network can access any material on the server, combine the pieces, and then save the results ready for replay. This appears to satisfy the requirements of the integration; however, the reality does not quite match the theory. Current network technology is not capable of supporting true CCIR 601 video; therefore, a degree of compression is necessary to pass just a single video channel. Multiple users and network overheads would

force this compression to a much higher level, or result in unacceptable delays in the network. To ensure unhindered operation it would be necessary to manage the system traffic so that the load is evenly distributed, which would mean imposing careful working practices.

The Digital News Production Center

The digital news production center solves a host of problems currently associated with news production. It provides a complete solution, integrating acquisition, editing, and transmission into one working environment, which can be simultaneously accessed by multiple users at any time for reviewing, editing, or transmitting the stored material.

Because the digital news production center combines the different functions of the news department, the problems of distribution of material are removed. The rushes are recorded into the central video server from the lines room through a dedicated input (or even via any one of the edit seats) and are manually or computer controlled. Once the material is in the video server it can be simultaneously accessed by any connected user. There is no need for duplication — a bulletin, a longer report, or an opening sequence can all be worked on using the same rushes.

As the news reports are completed they are instantly available for replay from any of the playback channels, again without the need to copy the report to a separate transmission server. This instant access to all of the material also means that last-minute changes during transmission can be made without worrying about preroll times and whether the tape has been loaded into the cart machine or VTR.

In addition to improving the efficiency of its news operation, broadcasters are also looking to involve their journalists in the editing process. The level of involvement depends on the individual news department. The minimum requirement is for the journalists to be able to review the original rushes in order to script the story. The ultimate goal is for them to be able to produce an edited report from their terminals.

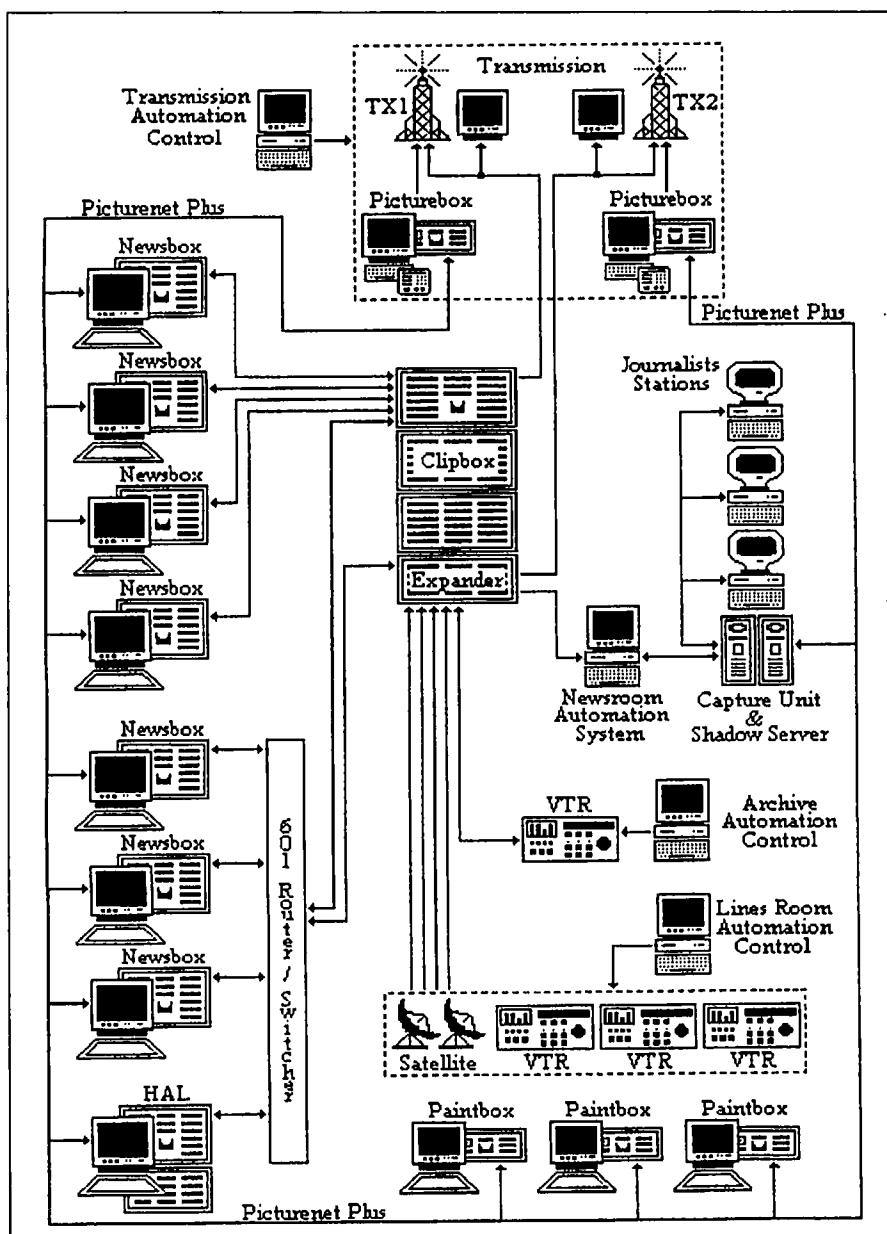


Figure 5. Clipbox and Newsbox digital news production center.

The development of the news production center has made this dream a reality. Through a network of terminals connected to a server, the journalist is able to review the video and make editing decisions. With storyboard editing, journalists can tag in and out points of clips, sending the information back to the central video server for instant assembly. If pressed for time, news companies could go to air with the conformed result, but it is just as easy to pick up and refine the clips from the edit seat. Of key importance is the ability to integrate such facilities with any chosen newsroom computer so that scripts can be written alongside the pictures. This is achieved by providing an open interface, which can be freely accessed by any such system.

Conclusion

As technology advances, so more and more news operations can be integrated into one cost-effective system. The goal is to develop a system that not only replaces existing products, but which changes the overall system into a much more streamlined and efficient operation without compromising speed and quality.

These requirements have been realized through a range of products developed for the application of television news production; an integrated editing system called Newsbox (Fig. 5); and Clipbox, a multichannel, true random access video store utilizing serial digital inputs (SDI) and outputs, providing a large amount of storage. These products can be configured in such a way as to satisfy the requirements of the digital news production center.

THE AUTHOR

Jon Shaw is product manager, news systems, at Quantel Ltd., Newbury, Berkshire, U.K. He joined Quantel following his graduation from Newbury College with an HNC in electronic engineering. He began his career as an in-house engineer, working on such products as the DLS 6000 still store, the Central Lending Library, and the Digital Post Production Centre "Harry." His next



stint as an installation engineer involved travel all over the world installing and commissioning Quantel systems. In 1993 Shaw joined Quantel's product marketing team as the product manager for the Paintbox system, overseeing the introduction of Paintbox Options. In 1994 Quantel introduced the Clipbox and Newsbox systems, for which he is currently product manager.