

## Monitor walls

BY JOHN LUFF



Most of the technology we work with on a daily basis has changed in subtle ways over the last several decades. VTRs evolved from analog recording, to analog inputs on digital recorders, to digital inputs on digital recorders — but they still do the same job. Similarly, cameras still have lenses on the front and output analog and digital signals. However, our methods of monitoring have undergone fundamental change in the last five years. Monitoring has transformed from unitary monitors

that were universally CRT-based to monitor processors outputting to inherently digital devices.

The first monitor processors appeared more than 10 years ago, not long after digital video effects became more affordable. As scaling hardware became more available and moved into consumer televisions, the professional side of the industry began looking for ways to use some of the same tools.

Today, the rich tool set available allows the design of monitoring environments, which are both flexible and can be made to adapt to changes in the

signals they monitor. This has permitted several hardware manufacturers to develop new and exciting aspects to what was fundamentally a boring part of technology.

### Display processor features

All multi-image display processors feature scaling engines, which adjust images in size and position, with few boundaries. They scale the images to fit many output formats, commonly matching computer interfaces at the output today. This has been a major force in the switch from dedicated



Today's best display processors give operators more immediate access to the most critical information needed at any time. Shown here is e-mediavision.com's X-View command wall system, which enables the monitoring of multi-site systems and the centralization of engineering resources on a 24/7 basis.

CRT displays to flat-panel LCD and plasma displays. Of course, there are limitations — primarily those related to quality issues. In the future, both displays and image processors must be able to replicate the resolution and

and ratings displays. Some products, however, have added a critical signal-monitoring capability that no CRT ever offered. This can take the form of simple signal loss (audio or video), full monitoring of captioning and other

on potential problems and spend less time scanning a wall of signals that are likely to be OK.

Large CRT monitor walls are often constructed with routing switchers or patching on the inputs of the monitors to allow display flexibility. Monitor processing engines (almost) universally allow that capability internally. They can often display 16 or more signals from a set of available inputs that is perhaps several times that many.

Large monitor wall processors allow further routing capability, with the ability to move complex outputs designed by the operator to other monitors. This also allows the duplication of a complex display in more than one place on a monitor wall for the convenience of other production personnel. In one IPTV facility, each operator can have access to each composite output. This allows supervisory positions to look over the shoulder of operators without having to get out of their chairs as often.

### Conclusion

The future development of monitor processing systems could lead to many new applications. Although current

## Our methods of monitoring have undergone fundamental change in the last five years.

colorimetry that a good CRT offers. Although at one time there was little focus on this important aspect, today many companies are developing products for such critical monitoring applications.

### Display processor functions

Today's best display processors perform a number of functions. First, they scale images to fit the output format and adjust size as appropriate and desired. They also allow many images to be combined into one output and insert borders and backgrounds to make the output pleasing and more relevant. In addition, they may offer features that go way beyond display preparation.

One additional feature often incorporated is multiple level tally inputs. These may be triggered by simple GPI closures or may offer data connections to production switchers, routers and external tally processors. In many applications, this is a critical path capability. When a display monitors many sources in flexible ways, the tallies must by definition be done in the same manner before they are passed on to the display device. Although most CRT monitors did not have multiple level tally inputs, in today's production environment, it is almost a requirement that multiple levels be supported.

### Signal-monitoring capabilities

With tallies, the processor often adds other ancillary data to the display of each input. This may include multiple-level audio metering, closed-caption

inserted data, as well as levels and other more detailed parameters.

This information can be passed to the output in a number of ways. Alarms and signal monitoring can be added to the individual displays or passed to external computer monitoring to allow interaction with control systems, which need to be aware of signal status. This can lead to some interesting capabilities. For instance, a facility can use this signal-monitoring capability as part of an automated program ingest system. When alarms are recorded for programs during unattended ingest, the data is written in a log by the automation system, which allows unattended ingest to proceed with operators checking only those sections

with technical issues identified by the monitoring system. The savings in labor and efficiency are obvious.

Consider another perhaps more interesting application. By allowing the monitoring output to change when errors are found in a signal, one can give an operator more immediate access to the most critical information needed at any time. In master control, when a primary signal causes an alarm, the system might bring the failed signal to full screen for the operator to decide if the failure is sensitive to air or not.

When a station or network operations center is controlling many outputs, this allows the operator to concentrate

## Automation of the placement and movement of individual displays would create powerful new uses in broadcast and other applications.

designs do not allow transitions like DVE moves, if a future processor allowed that kind of capability, it would serve well for feeding some stadium spectator displays. Other public venues could benefit from the same capability. Automation of the placement and movement of individual displays, and even compositing of data and images, would create powerful new uses in broadcast and other applications. **BE**

John Luff is the senior vice president of business development for AZCAR.

SEND Send questions and comments to: john\_luff@prism2b.com