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MATT KRSTULJA explains why fourth generation display walls are the way forward for both new TMCs and those in need of updating

Walk into any current traffic management center (TMC) and you will see the glow of seamless display walls showing video camera feeds and statistical data of real time traffic patterns and information. These are video walls that, over the last decade, have been an integral part of the shift to Intelligent Transportation Systems (ITS), making real-time traffic management possible and more efficient.

The days of 40-inch CRT monitors with quad video capability are long gone; nowadays, TMCs concurrently monitor hundreds of cameras and field sensors while disseminating live communication of this information to the public via variable message signs, travel information hotlines, highway patrol, dedicated field units and even news media during regular programming hours.

This combination of video, map information and textual data shown in a single array of displays developed over the years with advances in video display wall

technology. As ITS infrastructure expanded to take advantage of these seamless displays, video display wall technology has synchronized its own improvements to make them more usable for DOTs as well.

A new generation

The traffic industry will be pleased that new fourth generation video wall technology has finally reached a point where it is even more effective and efficient for TMCs to install and upgrade video walls, both large and small. Fourth generation video display walls offer four key areas of improvement:

1. Significantly increased product life through better components and better features.
2. Reduced operating and maintenance costs give better return on investment.
3. Systems are designed to be scalable for future upgradability.

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4. Built-in processing for better integration into legacy or older systems while making expansion economical.

Updating and upgrading

The challenge of today's TMC managers are just like the challenges of any manager involved with technology: How to update and stay current while not disrupting operations too significantly. This challenge can be easily addressed if your TMC is designed and equipped with fourth generation video display walls.

Step 1

The very first step for new or older TMCs is to make sure you take advantage of current technology by installing or upgrading to fourth generation display wall cubes.

Traditionally the life expectancy of video walls has not been consistent with TMC renovation and upgrade plans. In the past, legacy video walls have required DOTs to perform a mid-cycle upgrade to their video wall, or worse yet, nurse the existing video wall through its languishing stage, past its normal life expectancy of five to seven years.

New fourth generation video display wall cubes are designed to better match renovation plans of modern day TMCs and now offer life expectancies of up to ten to twelve years, nearly double previous-generation equipment. This is made possible primarily due to the "100,000 hour MTBF" found on all moving parts in fourth generation video wall cubes such as the DLP® imaging unit, cooling fans and color wheels.

Video wall cubes have also become more user-friendly; any component in the system is now easily user-replaceable with instructions and processes that can be easily understood and performed by DOT staff.

In the past, in order to avoid the dreaded "checkerboard effect," which is when each video wall cube maintains a slightly different brightness or color setting when a component was changed, calibration and testing of one form or another had to be performed. All fourth generation video wall cubes now have an automatic calibration capability on components that affect image quality.

Technologies such as LED light sources and automated geometry alignment are beginning to change the video wall industry, and display wall manufacturers

such as Christie, Mitsubishi and Planar are developing new video wall products to help TMCs of all sizes.

Mitsubishi is introducing its new “70 Series” display cubes. These are displays that are designed and built with a combination of fourth generation technologies including internal sensors and components integrated with chips that collect and interpret display elements, allowing the system to perform self-calibration and virtually maintain themselves.

DOT staff with minimal training can now spend less time on the mundane activities of video wall maintenance, and some activities are so automated that staff no longer needs to be involved. Thanks to fourth generation video wall cubes, DOT staff can now perform maintenance of the wall with only a basic product training course and some common tools.

Smart features like self-calibration and auto-balancing are also instrumental in reducing the maintenance cost of modern-day video walls. This brings us to the critical second step of designing and building your next generation TMC with fourth generation video display walls.

Step 2

Dual-lamp displays with long-life lamps should be strongly considered when designing and building or upgrading TMCs. Using dual-lamps simplifies lamp replacement and maintenance. In as much as downtime is unacceptable, individual cubes should never go dark as well, so automatic lamp changing virtually eliminates downtime due to lamp replacement.

Additionally, maintenance of fourth generation cubes should consist only of physical replacement of demise lamps while the display cube is active and done only once every year or longer with effectively no interruption to daily operations. This combination of long life parts and self-calibration maintenance significantly reduces the cost of ownership of the system and increases the productivity of any TMC.

Another key feature in fourth generation video wall cubes, in conjunction with reducing cost of operations and maintenance, is scalability. Now, you can replace only the projection portion of its video display wall cube without replacing the entire cube unit, its screen or its cabinet.

Step 3

This brings us to the third step of upgrading to fourth generation video wall cubes, which requires a DOT to easily address the issue of scalability and upgradability. Fourth generation video walls have a modular build and configuration so DOTs can easily budget for system retrofits to internal components of the video wall cube without performing major construction. The common cabinet design also enables easy upgrades to the system, taking immediate advantage of advancements in technology, and keeping your TMC current.

Integration

Integrating new product into an existing infrastructure can be a major concern. Most existing video display walls utilize an external display wall processor that pulls



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in content from different sources such as video cameras, television, field sensors and GIS information and combines them into meaningful display for proper real-time interpretation by DOT staff.

These existing processors should work directly with new fourth generation video walls, but what about systems with no processor? Fourth generation video display walls can now be independent of external video processors.

New generation video walls should come with basic processing capabilities built-in, allowing them to window multiple computer and video sources at the same time. This is ideally suited for smaller TMCs that need to integrate video from existing video switches with application data found on a few computers.

Simple applications such as these can easily be addressed with basic processing power in Mitsubishi's 70 Series video display wall cubes. In addition, returning to scalability and upgradability, these cubes can also grow with your TMC as your needs grow and become more comprehensive, when you might need the extra power of more sophisticated external processors.

So whether your TMC needs a beginner-wall with basic display processing, or an advanced-wall with existing external processors of multi-level resolutions, a new fourth generation video cube wall should work for you, either independently or by harnessing the power of third-party dedicated processors.

Investing wisely

Video wall cube technology is an important investment for any TMC. Its initial capital outlay is significantly higher than other technologies, but its usability, scalability, and long-term cost of ownership offers significant benefits such as improved integration of traffic cameras with GIS and sensor data.

For those TMCs with existing video wall technology, determining the need to upgrade to a fourth generation video wall may be easier than you think. If your TMC has 1st or 2nd generation video walls (1997-2005), then you would benefit significantly if you upgrade because you can instantly realize improved cost of ownership due to improved lamp life and extended durability of other components. You would also enjoy a lot less maintenance through smart features such as auto-calibration and auto-balancing features.

Often, it can be found that upgrading to new fourth generation cubes reduces annual operating expenses recouping the initial cash outlay of the upgrade within a period as short as a couple of years, while you enjoy the productivity of modern technology and the assurance staying current with many of the expected technological advancement to come.

Even if your TMC is currently using monitors or flat panels, it is still worthwhile to examine the functional and efficiency benefits of upgrading to video wall technology to reduce maintenance and downtime. **TH**

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