LIVE DESIGN

# ViVa La vista!

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Andy Ciddor

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Jands Vista is a lighting console in the same way that the VARI*LITE® 1 was a luminaire. Like all consoles since the gas plate in 19th century theatre, it controls the lighting for performances. Unlike any previous console, Vista's timeline approach to creating lighting transitions offers the possibility of controlling light in the time dimension as easily as its predecessors handled intensity, color, beam, and focus. It presents lighting as a dynamic series of transitions, rather than static states separated by changes.

If Vista had brought only an entirely new and simple method of programming robotic lighting, it would be a console worthy of our attention. However, it also takes the process of fixture abstraction to an entirely new level with its Generic Fixture Model. Again, this is an achievement that, on its own, would make the Vista what I consider to be a breakthrough console. Together, these new capabilities give us a refreshingly new way to program and provide a welcome disconnection of the programming and design process from the technical detail of the underlying technologies.

The most immediately obvious innovation in Vista is the full-color, high-resolution graphics tablet and a graphical user interface (GUI) that owes more of its heritage to multimedia editing, office productivity software, and graphic design than it does to any existing lighting console. Nick Denville, Vista project leader, describes it this way: “We want everything on Vista to be visual and immediate. You shouldn't have to go through screen after screen to get a result.”

To achieve this apparent simplicity, the user interface has been designed to be comfortable and familiar to anyone who uses computers with contemporary operating systems, such as Microsoft® Windows® XP, Mac OS® X, or any of the Linux family. In the windowed computer GUI, devised at Xerox in the 1970s and since refined by Apple, Sun Microsystems, AT&T, and Microsoft, there is a man/machine interface that is now familiar to almost everyone involved in lighting. The Vista design team has taken the (retrospectively) obvious step of using this interface for lighting control.

The breakthrough timeline screens, used for creating and modifying transitions of intensity, color, position, beam, and focus, look as if they could belong in Microsoft Project®, Pro Tools®, Flash MX™, or just about any MIDI sequencer. Color selection is via a tabbed, multimode palette system that would be right at home in Adobe® Photoshop® or Quark XPress®. The icons for system functions use the symbols found in most office software applications. Fixture selection and pan/tilt positioning are done via screens that might easily be a part of 3ds max®, Vectorworks Spotlight, or AutoCAD®. The interface even includes Undo and Redo functions with the same counterclockwise and clockwise arrow symbols that you see everywhere, from your desktop publishing program to your spreadsheet.

Wherever the Vista has been shown to end users, there have been enthusiastic comments regarding its ease of use and simplicity of operation. One world-renowned British lighting designer, consultant, and sometime console designer said, “That's the way it should be done. I don't understand why someone hasn't done it before now.”

However, a much more telling observation comes from the 19-year-old computer science student at home. He isn't into lighting at all, although he does do some audio, 3D animation, and multimedia. When shown the timeline interface of the Vista he simply said, “Yeah. So how else could you do it?” After being shown the procedure on a state-of-the-art, 21st century console, he was totally incredulous at the clumsy and indirect

process. He had trouble accepting that we were crazy enough to try programming lighting transitions using all of those buttons, wheels, and faders.

The Generic Fixture Model is, perhaps, the most adventurous and powerful part of the Vista system. It offers almost total isolation of the programmer from the details of fixture, while requiring the desk to know more about every fixture than ever before.

In previous, fixture library-based systems, when a fixture is under control of the color selection wheel, fader, or palette, the console is doing the housekeeping chore of translating information for that specific fixture. For example, on a luminaire with a color wheel, the console has to remember that Flame Red is in position three on color wheel two, which translates to channel five at level 212. In the case of a luminaire with a color mixing system, the console has to remember that Flame Red is a particular set of positions for the CMY (Cyan, Magenta, Yellow) filter wheels, which eventually becomes channel 11 at 014, channel 12 at 219, and channel 13 at 177. While enormously useful in simplifying the task of programming the color for a specific fixture type and model, the information in this type of console is not portable between different types of luminaires or different color selection systems.

Vista's Generic Fixture Model enables the console to store highly abstract, fixture-independent information about each transition. This is then processed through a mathematical representation of the fixtures in use to produce the DMX512 data that drives the actual fixtures.

In Vista, when a programmer selects the color Flame Red, the system stores the RGB (Red, Green, Blue) and HSV (Hue, Saturation, Value) values for Flame Red, rather than a set of DMX512 levels. When Vista plays back the lighting transitions that call up Flame Red, the stored RGB/HSV data is then translated into the RGB, CMY, or HSV values that will produce this color from the fixture in question. If there isn't a color mixing system in the fixture, then Vista will select the closest mix or match from the available colors in the fixture's color wheel or wheels.

To achieve this level of fixture independence, Vista's fixture characteristics library must contain a vast amount of information. The library contains all of the usual parameters, such as pan and tilt resolution and channel allocations. In addition, Vista requires data on the types of gobos and prisms and the transfer characteristics of the optics, the shutter system, the iris system, and the color mixing system. A transfer characteristic describes the relationship between the DMX512 levels sent to the fixture and the actual amount of the color, shutter speed, zoom, or iris opening that is produced.

As the transfer characteristics for most fixture color mixing systems are generally not available, one of the tasks of the Vista development team was to obtain this data. To do this, they created a computer-based system that uses a Minolta chromameter and a DMX source to capture the colorimetric information from an operating luminaire. This data is then converted into the format required by Vista.

The implications of the Generic Fixture Model are far reaching. By separating the actions of a lighting transition from the fixtures that will carry out these actions, a vast array of possibilities unfolds. The most obvious of these is the ability to substitute one type of fixture for another with minimal impact on the look of the production. The standard Vista demo includes a WYSIWYG demonstration of a group of Martin MAC 2000s being replaced by a similar number of Clay Paky Golden Scan IIIs, with little or no change in the look of the show.

The Generic Fixture Model can also work the other way around: by applying abstract action information to different fixtures. On the Vista, these abstract actions are known as Extracts. If you have created a transition that you like, such as a complex delayed fan with a color chase and a gobo change, you can copy that transition from one group of luminaires to another with just a few taps of the stylus. Alternately, you can save that Extract to hard disk or CD-ROM and re-use it on another production or another sequence, even if the target system is completely different. When applying an Extract, it is possible to select the features you wish to use, allowing you to apply the beam movement and the gobo change but forgo the use of color chase.

I have a vision of an ultra-low budget tour with a specific system layout, except the rig is populated with whatever appropriate fixtures happen to be available for the best price in each city. The Vista is brought in, the fixture types are adjusted for the rig, and the show goes up, looking just like it did the previous night, despite the totally different fixtures and control hookup.

The Vista team has sought to build this system from the ground up, using as many standard components as possible. The main processing engine is an industrial version of a 533Mhz Pentium 4 motherboard running a 2.8GHz processor with 512MB/1GB of RAM. Data storage is on a shock-mounted 40GB notebook hard drive and a 52/24/52x CD-writer. While this may appear to be a very high-powered system for a lighting console, the GUI, the complexities of the Generic Fixture Model, and a very busy production with thousands of DMX channels should keep it from getting too bored.

The main programming interface is an off-the-shelf, 15" LCD graphics tablet with a resolution of 1024×768 and a viewable angle of 80Þ in all directions. The tablet requires a stylus for operation, thus eliminating the possibility of false triggering by fingers, stray pieces of stationery, or items of snack food. There are three USB ports for an external mouse, keyboards, memory sticks, etc., and VGA ports for two additional monitors. System fans are all thermally controlled to minimize console noise.

Console ports include audio, SMPTE time code, MIDI In/Out and Thru, RS-232, and trigger In and Out. Data outputs are via four RDM-ready, bi-directional DMX512 ports, one of which can receive DMX512 on pins four and five. A 100Mbps Ethernet port currently supports the Art-Net and Pathport DMX over Ethernet protocols.

Like the hardware, Vista's software is built from standard components. The base operating system is a severely pared-down version of Red Hat Linux, with the majority of the Vista system being written in very portable C++ utilizing the Qt graphics library. All three monitors appear to the system as a single extended display, allowing any Vista window to be dragged and dropped on to any of the displays. The choice of operating systems and programming languages makes it quite feasible that we may see Windows and even Mac versions of the Vista.

It takes a lot of courage to throw away the book on lighting console design and invest four years in thinking and designing your way to something as revolutionary as the timeline/GUI interface and the Generic Fixture Model. Fortunately for both Jands and the lighting industry, the Vista holds a lot of promise, and it will be intriguing to watch just how far this console will go toward changing the face of lighting control.

*Andy Ciddor of The Kilowatt Company has been a practitioner, educator, and writer in the field of production technology for 30 years. He can be reached at* aciddor@kilowatt.com.au.

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