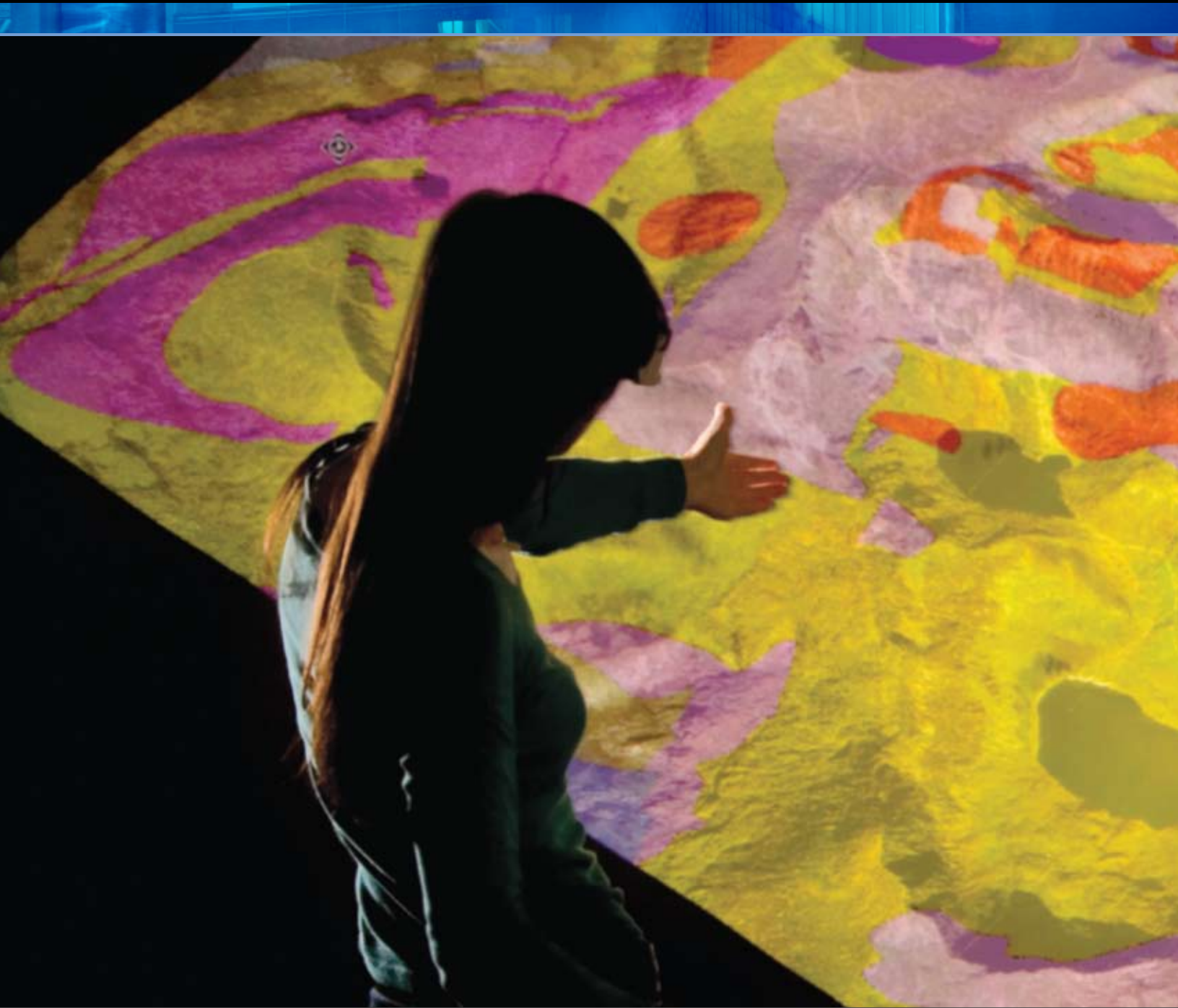


# 3D/Advanced Visualization Solutions

Aerospace  
Architecture  
Automotive  
Education  
Entertainment  
Government  
Homeland security  
Large venues  
Life sciences  
Manufacturing  
Museums  
Oil and gas exploration  
Scientific research  
Theme parks





▲ British Geological Survey's new 3D visualization system

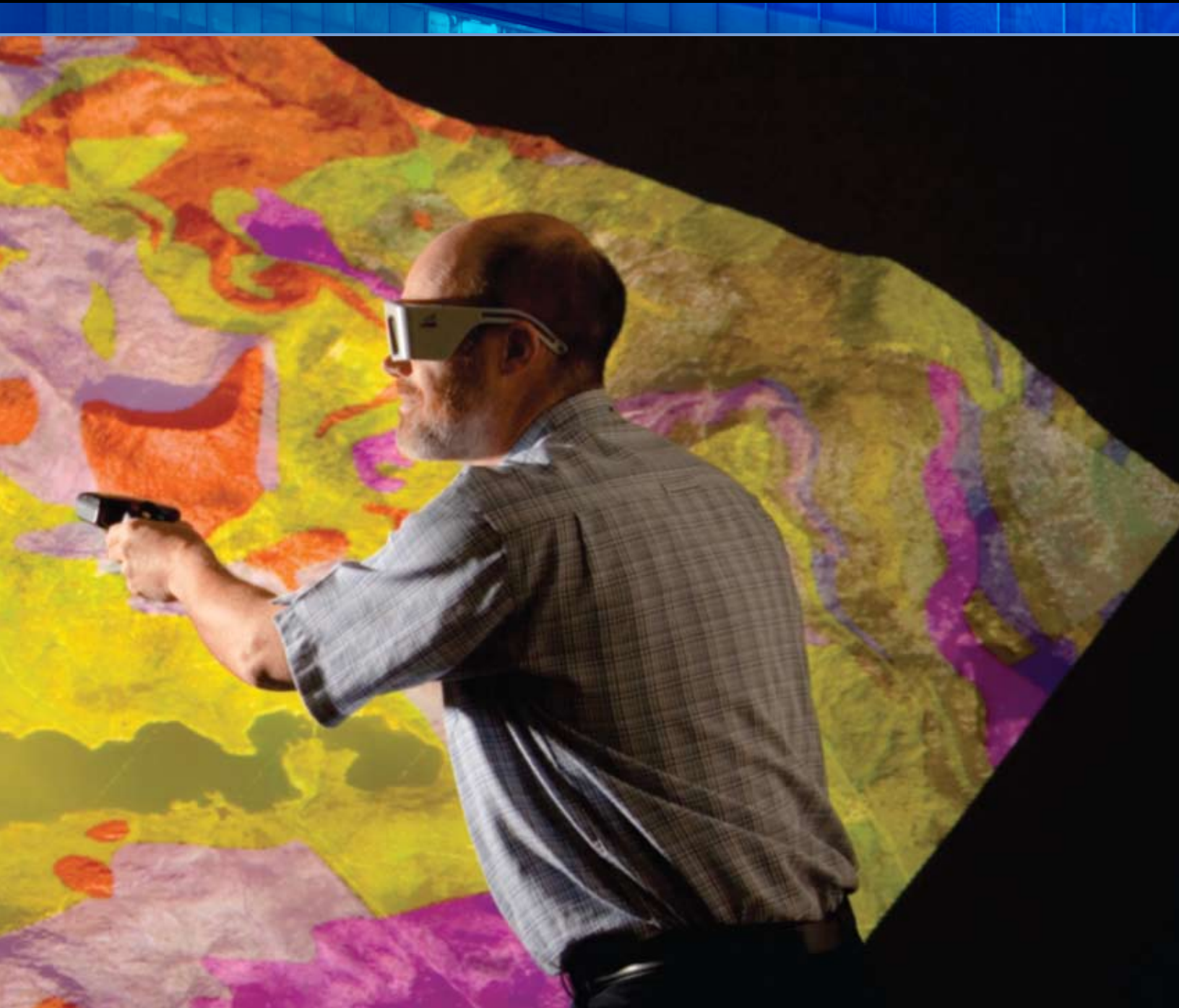
When Christie first announced their Mirage S+4K projector, VR specialists Virtualis became an early adopter, recommending it to the British Geological Survey (BGS) as part of an integrated StereoWorks visualization system they provided early last year at their headquarters in Keyworth, Notts.

At the time, Virtualis' technical director Andrew Connell commended the Christie Mirage S+4K projector as being "the first of its type in Europe". So successful was this integration that Virtualis proposed an almost identical solution for the BGS at their large regional facility in Edinburgh, enabling geologists based

there to explore their geological data in full stereo 3D. This allowed them to upgrade from a computer-based visualization system to a full 3D immersive modeling environment.

To accomplish this, Virtualis wrote a customized software package tailored for the BGS' requirements – and again the Christie Mirage S+4K digital projector was equal to the VR specialists' demands for high-grade active stereo, rear projected onto a 3.1m x 2.3m screen in 4:3 aspect ratio. Fitted with a 0.73:1 fixed lens, the Mirage S+4K is mounted on racking in the dedicated projection room.





The complex nature of today's advanced visualization applications offers a variety of display and image challenges. Christie's display solutions can produce images of any size or resolution, to meet virtually any requirement. As one of the industry's original technology providers, Christie has identified the technological problems customers face and developed true business solutions to resolve and eliminate these issues. Christie understands each project is unique, and has developed a proven approach that puts our customers at the center of the process.

As your partner in 3D/Advanced Visualization, our world-class sales engineers, project managers, design and mechanical engineers and integration experts work together to deliver the most advanced, functional, and intuitive display solutions. Whether you are an integrator looking for a visual display partner, or an end-user with a project that has demanding specifications, Christie delivers application-specific solutions.

Once integrated, you can expect consistent, repeat performance without worry as Christie's high product reliability enables extensive, consistent use with minimal downtime.

**CHRISTIE®**



▲ Entertainment – Calcutta Rugby Match in 3D, Edinburgh, Scotland



▲ Education – Institute of Information Technology, Vietnam



▲ Oil and Gas – British Geological Society

### Christie – your trusted partner

Each visualization environment brings its own set of requirements whether it's single channel, multi-channel or an ultra-high resolution system. As one of the industry's original technology providers, Christie has identified these technological problems customers face and developed true business solutions to resolve and eliminate these issues. Christie understands each project is unique, and has developed a proven approach that puts our customers at the center of the process.

As your partner in Advanced Visualization, our world-class sales engineers, project managers, design and mechanical engineers and integration experts work together to deliver the most advanced, functional, and intuitive display solutions. Whether you are an integrator looking for a visual display partner, or an end-user with a project that has demanding specifications, Christie delivers application-specific solutions.

Once integrated, you can expect consistent, repeat performance without worry as Christie's high product reliability enables extensive, consistent use with minimal downtime.

### Where will you find Christie?

Christie provides purpose-built technology that spans a wide spectrum of today's leading organizations including government and education institutions, industries such as automotive and aerospace, as well as research and development. The possibilities are as limitless as your imagination.

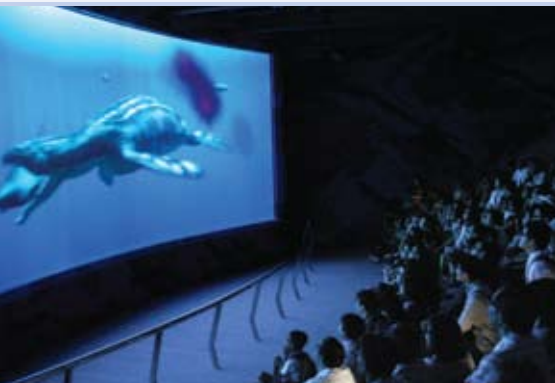
### What is a TotalVIEW™ solution?

Christie TotalVIEW™ solutions are comprised of leading-edge display technology and world class system integration expertise. Christie's TotalVIEW™ solutions can produce images in any size or shape, front or rear projected, spherical, cylindrical, conic or flat screen, from small-team scale screens to large scale dome configurations.

Christie display technology has been used in more 3D/Advanced Visualization environments than any other display company in the world. Whether it's a fully integrated TotalVIEW™ solution, or the inclusion of industry-leading Mirage Series projectors, more of today's leading organizations trust Christie to provide them with the right solution for their needs.

Built on a proven approach that takes you from upfront project consultation and needs analysis, to post-installation service and support, Christie's team of integration and installation experts will work with you every step of the way.

▼ Taiwan's Waters of the World Museum







▲ Scientific Research – Belfort University



▲ Architecture – SuzHou City Planning



▲ Education – Western University Faculty of Health Sciences, Virtual Reality Theater

**Your partner in Advanced Visualization**

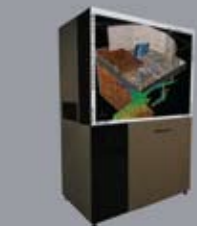




With a customer-centric approach to providing application-specific visual displays, Christie has a long history of delivering high-quality, reliable solutions and unprecedented levels of customer service and support for visualization customers worldwide.

Some of our projects include:

- Discovery World
- BP Aberdeen
- BP Gulf of Mexico
- Weil Cornell Medical College
- Marathon Oil
- Pennsylvania State University

Christie delivers complete visual solutions for sophisticated visualization systems. With design facilities spanning three continents and sales and support offices across the United States, Canada, Chile, United Kingdom, France, Spain, Italy, Germany, China, Singapore and Japan, Christie is well positioned to respond to any challenge.

3D/Advanced Visualization solutions designed and developed based on the world's most installed 3D display technology – Christie's Mirage Series DLP® projectors.

	TotalVIEW™ Mobility	TotalVIEW™ Wall & Collaboration Solutions			TotalVIEW™ Immersive
		Office	Multi-channel	Ultra-high resolution	
					
Collaboration scale	Small-team collaboration	Small-team collaboration	Any size team collaboration from conference rooms to large auditoriums		Total data immersion
<b>Visualization solution specifications</b>					
Screen size	67" diagonal or 80" diagonal	Customizable solutions designed around application requirements			Available in a variety of options
Stereoscopic display	Active or passive stereo options				
Screen type	Flat screen	Typically flat screen	Flat or curved screen options	Flat or curved screen options	• 3, 4, 5 or 6 sided walls • Reconfigurable options available
Aspect ratio	Standard 4:3 or HD 16:9		Custom scaled to meet requirements		
Features	<ul style="list-style-type: none"> <li>• Christie Spyder X20 with 20 mpx bandwidth, up to 120Hz frame rate and up to WQXGA (2560 x 1600) resolution sources</li> <li>• Simultaneous 2D/3D application viewing/windowing</li> <li>• Christie Twist™ enhanced warping/edge-blending</li> <li>• Christie TrueIMAGE™ Integration Tools – AutoCal™, MotoBlend™</li> </ul>				
Compute platforms	Christie TotalVIEW™ solutions are compatible with all computing platforms				
Tracking	Christie offers a variety of tracking options				
Interaction	Christie offers a variety of interaction tools				

\* Please consult with a Christie representative for solution pricing based on requirements. Some options not applicable for some systems.



Christie understands that each customer has a unique set of needs and requirements for their Advanced Visualization environment. Based on successful installations around the world, Christie has a proven process in place to take you and your project from inception to completion with proven technical reliability, on schedule and on budget.

### Needs analysis

What do you need your display system to do for you? Christie works with you to assess your workflow requirements and system considerations. Once the scope of the project has been agreed upon, Christie provides recommendations for the most cost-effective, functional and usable system to meet your specific needs.

### System design

Diverse advanced visualization applications offer a variety of issues and challenges and Christie provides high-performance “real world” visual display solutions for 3D and Advanced Visualization. Factors such as geometry, image blending and warping, resolution, color and brightness uniformity are key criteria that must be addressed when designing advanced

visualization display solutions. Christie’s expert system design offers an innovative individual approach to developing purpose-built, reliable and efficient solutions that meet even the most demanding requirements.

### Project management

Christie’s certified project managers oversee the finite details of the entire process efficiently, on budget and without worry for a seamless transition from concept to completion and customer operation.

### Installation

From initial site survey to final installation, Christie’s expert application engineers provide you with complete confidence that your Advanced Visualization system will be installed and integrated quickly, efficiently and 100% operational.

### Training

Christie’s training and support leaves you and your staff completely capable, ensuring ease-of-use and full interaction, integration and maintenance of your TotalVIEW™ solution.

### Christie Comprehensive Care

Our commitment to you starts the moment you start doing business with us. With established local support in over 40 North American cities alone and worldwide offices offering localized support for international installations and global deployments, we offer customer-centric service with years of extensive experience in high profile and mission critical 24/7 applications. Our professional services and support include the following:

- Feasibility studies
- Design
- Project management
- Installation
- Systems integration
- Training
- Managed services
- Remote monitoring and control



◀ The Weill Cornell Visualization Facility is powered by Christie Mirage HD3 digital projectors, which feature high-definition resolution and projection technology, delivering superior images for molecular modeling, medical diagnosis and scientific research.



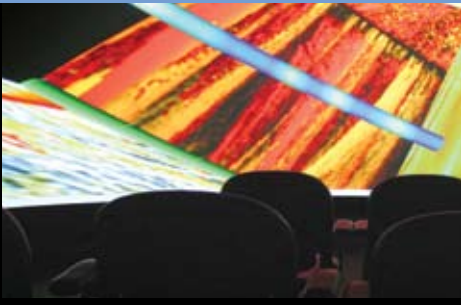


▲ Christie's 3D Immersive CAVE among Discovery World's most popular new exhibits.

Christie designed and installed a custom, fully immersive Christie TotalVIEW™ CAVE at the renowned Discovery World in Milwaukee at Pier Wisconsin, offering an interactive glimpse into the future to educate and entertain. Dubbed by Discovery World as Human Interactive Virtual Education (HIVE), the immersive 3D environment allows visitors a "near-real" experience of life around them by placing them in the middle of virtual, three-dimensional worlds that are breathtakingly lifelike. The HIVE provides an interactive and educational 3D walk-through of the museum's latest and most innovative concepts.

Discovery World's HIVE achieves incredible levels of realism with Christie's Mirage Series projectors – the most installed 3D projection display technology in the world. EON Reality, a partner with Christie, provides the interactive visual content management software that enables sensory and real-time visual interaction.

The HIVE features high-tech projection on three 8' by 10' walls and the floor, providing a unique, fully immersive visual experience. A set of active 3D glasses with motion-tracking technology completes the illusion, with the projected images shifting perspective in reaction to the person's movements. Visitors will find themselves hovering above the water, walking through a small town in Portugal, or flying through the solar system, among nearly 30 experiences available.



### Christie Mirage Series

Let's face it, there is much more to an advanced visualization display solution than just the display, but the image is what the results will be measured against and having world-class projection technology as part of the overall solution is a definite advantage.

The Christie Mirage Series offers the broadest range of 3-chip 3D active stereo projection in either a single projector, or a multi-projector array. The first purpose-built stereoscopic line of projectors, the series represents the most installed 3D projectors in the world. Brightness ranges from 3000 to 18,000 ANSI lumens for active stereoscopic images from a single projector. SXGA+, HD and the latest WUXGA models are designed specifically for use in a variety of 3D applications for all types of immersive environments including cubes or CAVE™-like\* systems and curved or flat screen powerwalls.

With the highest reliability, high brightness capability, excellent color and brightness uniformity and control coupled with low maintenance, the Christie Mirage Series is the most installed 3D projectors in the world.

Christie's projectors feature with built-in geometric warping and edge-blending capabilities, and unique proprietary purpose-built features to meet the demanding requirements of advanced visualization display. A broad range of specifically-designed high contrast lenses for increased contrast, optional input modules, mounting systems and customized structures, networking capability and other peripherals provide the flexibility needed for your unique application.

### High product reliability

Christie's longer lamp life usage and an increased Mean Time Between Failure (MTBF) offer solutions built to last for extensive use in advanced visualization displays.

A Christie TotalVIEW™ visualization display features highly reliable, DLP® technology and delivers high brightness, unsurpassed color, and brightness uniformity and control capabilities. And, this proven digital technology is low maintenance. Christie's high level of post-install support provides worry-free, 24/7 system operation via our networked managed services programs, and on-site system administration and maintenance services.

### Remote networking, monitoring, diagnostics and control

With ChristieNET™ connectivity through an IP address, displays can be monitored and controlled remotely.

### Operating/maintenance costs

Lower power consumption, fewer lamp changes, less downtime and ease of set-up provide an overall lowered cost of ownership and a greater return on investment.

Christie's user-friendly Graphic User Interface makes operation and set-up of the entire Christie Matrix Series uncomplicated. Multiple control options let the user choose what's best for their application. Motorized lens functions provide power focus, zoom, horizontal and vertical offset – all at the touch of a button. Auto set-up recognizes sources and sets up correct brightness, contrast and position. With dual lamp technology you have reliability and longer lamp life.

\* CAVE™ is a trademark of the University of Illinois

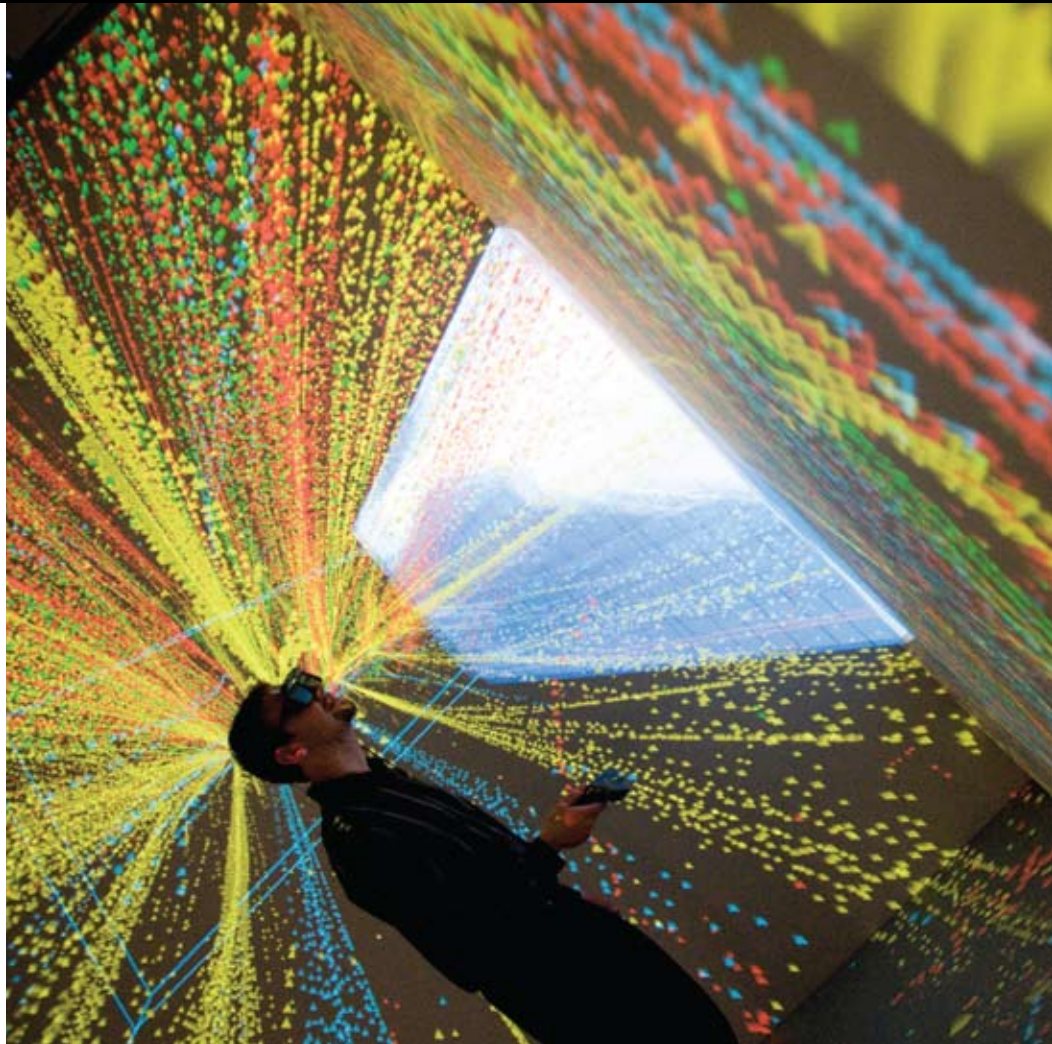




### Serviceability

Field-replaceable lamps, interface modules, a 15 minute MTBF, built-in diagnostics, and single-tool servicing – create a complete, self-sufficient solution.

Christie's field-alignable DMDs and a cleanable optical engine put full control in the hands of the user. Replacement lamp costs are low and Christie offers the best warranties on the market – 2 years parts and labor (excluding light engine).



◀ Christie's 3D/Advanced Visualization solutions help drive innovation at Louisiana Immersive Technology Enterprise.

One of the world's largest and most advanced 3D immersive visualization and supercomputing facilities – Louisiana Immersive Technologies Enterprise (LITE) utilized Christie's TotalVIEW™ 3D/Advanced Visualization integration and installation.

LITE is a \$27 million, 70,000 square foot complex and is one of the most comprehensive data visualization and supercomputing installations in existence. Enabling users to collaborate and interact in real-time with even the most complex of datasets, LITE provides advanced visualization resources for commercial industry, government and research organizations.

Christie's visual displays offer exceptional image quality from from SXGA+, HD and WUXGA DLP® technology, high-quality optics and 10-bit image processing. Images are crisp, clean and finitely detailed for a truly realistic experience.

Featuring 10-bit image processing, Christie offers high bandwidth signal processing. With 220 MHz, Christie's visual displays support additional functionality such as Picture-in-Picture and seamless switching between sources.

**Christie Twist™**

Christie Twist™ is a powerful, easy-to-use option to manage arrayed projectors that allows users to display virtually any image, anywhere.

This powerful tool allows for pixels to be mapped to any projection surface with proper

geometry and perfect pixel to pixel alignment. Christie Twist™ provides the enhanced warping and expert blending required for arrayed projectors to operate as a single, uniform display.

Christie Twist™ is a dedicated, purpose-built hardware and software solution that enables full

image warping and advanced edge-blending, through the control of a powerful and easy-to-use Graphic User Interface. Users can expertly edge-blend multiple curved images seamlessly. Images can be warped to fit virtually any dimension or shape display with perfect pixel to pixel alignment.

Christie Twist™ software features	Twist	Twist Pro
Custom warping, edge-blending of multiple projectors (up to 6 projectors)	●	●
Display control points and warp lines on projector	●	●
Add, delete, copy and paste multiple warps and blends on a single projector	●	●
Module with included operating software	●	●
Easy to use GUI that runs on an external PC	●	●
Allows up to a 10' x 10' grid	●	●
Control from any PC via Ethernet or RS-232 protocols	●	●
Includes Christie Twist™ Virtual Remote	●	●
Blends are defined with a black and white curve pair for each edge of the screen	●	●
Masks are defined with a mask curve for each edge of the screen	●	●
Has a Blend Calculation feature	●	●
Contains online help and printed manual plus an electronic PDF version on the CD	●	●
Single license of Christie Twist™ Pro		●
Supports single or multiple projectors simultaneously		●
Allows an unlimited and arbitrary number of grid lines		●
Advanced edge-blending		●
Gradient preview of edge-blends		●
Brightness uniformity control		●
Display control points and warp lines on projector		●
AutoSave		●
Projector control through Twist™ software interface		●

**Christie Twist™ Pro**

As an additional optional software upgrade, a single license of Christie Twist™ Pro supports an unlimited number of projectors per array and offers the following additional capabilities:

- Allows an unlimited and arbitrary number of grid lines
- Advanced edge-blending and blend masking
- Rotate and flip capabilities
- Gradient preview of edge blends
- Brightness uniformity controller

► The University of Kassel's Institute of Production Technologies and Logistics includes the Production Organization and Factory Planning division. One focal point of this division's research is the digital factory. Simulation and visualisation are the main pillars of the digital factory, and thanks to Christie and partner 3Dims GmbH of Frankfurt, the division has an advanced new visualization system.







**SuperCR™ contrast ratio**

With the internal variable contrast aperture, contrast ratios range from 1500-5000:1 for vivid, dynamic image reproduction and low black levels for accurate visual displays.

**Brightness and color uniformity matching across multiple screens**

Brightness and color uniformity matching across multiple screens is integral for completely life-like reproduction of the source, every projector and every screen in the display must be equal in brightness and color.

**Digital Color Management (DCM™)**

The Christie Matrix Series comes standard with a specially designed optical system with a very tight ± 5nm tolerance for primary colors, making multi-channel adjustments between multiple projectors an easy task to accomplish.

**Color Temperature Control (CTC™)**

Provides the flexibility to adjust color temperature with a range from 3200K – 9300K.

**Custom Gamma Adjustment (CGA™)**

Offers full control of gamma curves, as well as white, black and grey levels to ensure digitally accurate colors and greyscale tracking.

**Primary Color Adjustment (PCA™)**

Provides individual RGB color matching for multi-channel applications to eliminate color variations across multiple screens for uniform, color-matched projector arrays.

**Spatial Light Image Construction (SLIC™)**

Christie-built DLP® engines ensure high-quality convergence and registration between red, green and blue DMDs.

**Lamp Power Management (LPM™)**

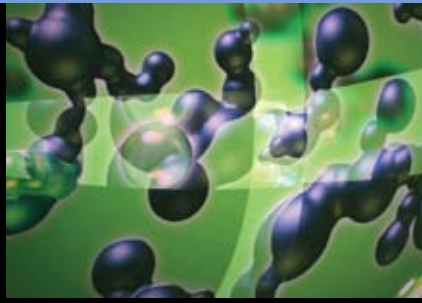
Provides users with the ability to adjust power to the lamps for a consistent and uniform brightness, to monitor and manage the lamp operation in the display. Brightness adjustments can be made from center to edge across the image for up to 100% uniformity.



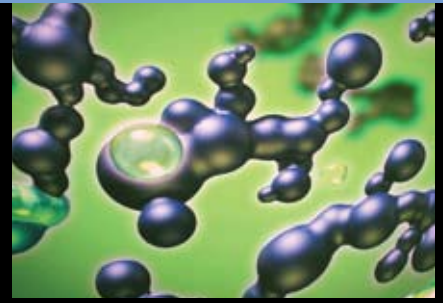
◀ Discovery World's Human Interactive Virtual Education (HIVE).



Before Christie AutoCal™



After Christie AutoCal™



**Christie TrueIMAGE™ integration solutions**

In today's world, diverse and highly technical visual solutions are applied to solve some of the key issues and challenges facing global scientific and manufacturing communities. Because each and every application is different, and a "one type fits all" display is not the answer, we developed Christie TrueIMAGE™ integration solutions – customizable, reliable and efficient tools designed to meet the most demanding requirements of blended projection arrays.

Factors such as geometry, image blending and warping, resolution, color and brightness uniformity, and latency are key criteria that must be addressed when designing advanced visualization displays.

Christie TrueIMAGE™ integration solutions offer:

- Reduced location resource requirements
- Increased customer independence in terms of display maintenance
- More realistic displays
- Enhanced visual performance of the complete system
- Optimized displays

**AutoCal™ – automatic display system calibration**

You don't need to be an expert to maintain a blended projection display and keep it running at top visual performance. As part of Christie TrueIMAGE™ integration solutions, Christie AutoCal™ calibrates virtually any arrayed projection display, from flat to cylindrical to spherical, and adjusts it to its optimized viewing configuration.

A simple checkbox interface makes interaction user-friendly allowing users to re-calibrate both geometry and blending with unequalled accuracy. Other features such as image color and brightness correction can also be adjusted.

Christie AutoCal™ offers reduced location resource requirements and increased customer independence in terms of maintaining multi-projector displays. Christie AutoCal™ delivers the results you require and allows you to spend your time using your display, not maintaining it.

Have you determined a need for a large-scale arrayed projection environment or display, but don't think you have the resources or the expertise to support it? How much more productive can you be with your display stabilized, and your system maintenance and downtime reduced? With Christie AutoCal™ you have expert image display adjustment capabilities at your fingertips.

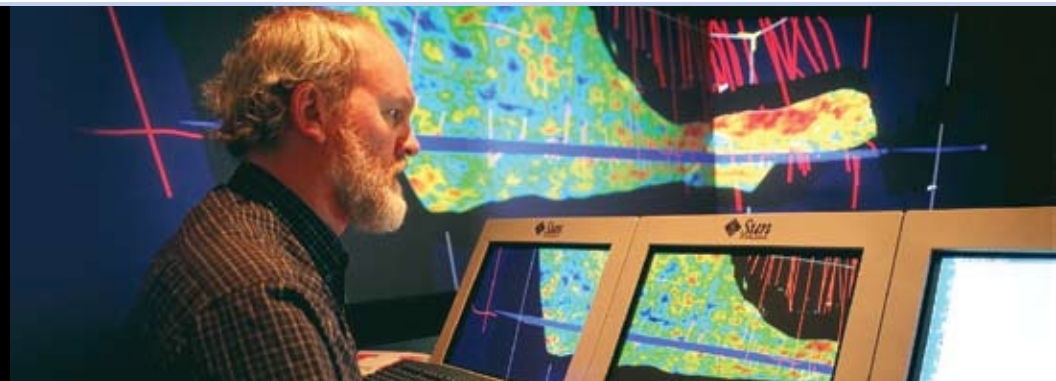
**Christie Advanced Color™**

Part of the Christie TrueIMAGE™ integration solution suite of tools, Christie Advanced Color™ is a user-assisted tool that enables advanced color matching from simple to complex arrays, regardless of the level of experience.

Using a precision light meter, computer and software with a simple user interface, the operator is automatically guided to point the meter at the screen and data is fed into the computer. Looking at each individual projector, the calibration camera captures information about projector performance and feeds it into the color calibration processing.

The computer performs the calculations and places the color mapping information on the projectors – that information stays on the projector until you choose to re-tweak the system.

▶ Three Mirage Series projectors are the core of the South Australian Virtual Reality Center 3D Visualization system. The center is used mainly for oil and gas applications as well as research.





► These images illustrate a 2-projector blended array. Left – before Christie Advanced Color™. Right – after Christie Advanced Color™.



### Christie MotoBlend™ – motorized optical blending

Day or night, dark or light applications, why compromise your display system? Developed using our extensive experience with dynamic content, Christie MotoBlend™ helps maximize the best of both worlds when it comes to life-like images and DLP® based displays and environments – system contrast and optimized dark scene applications.

With digital projection technology fast becoming a standard in Advanced Visualization, Christie's motorized optical

blending ensures your dark scene content (such as night time training applications) is evenly maintained across the entire display, without any residual light distractions or artifacts that can be found in other manufacturer's digitally projected displays.

Designed for use in static or motion platform applications, Christie MotoBlend™ is engaged or disengaged depending on the intensity of the image. Christie's motorized optical blending preserves your systems maximum contrast ratios at all times as well as maintains optimum blends for all types of content.

If you're looking for an integrated system that improves your experience and is flexible enough to offer zero compromise between your light and dark scene applications, Christie's got it.



No MotoBlend™



MotoBlend™ Engaged

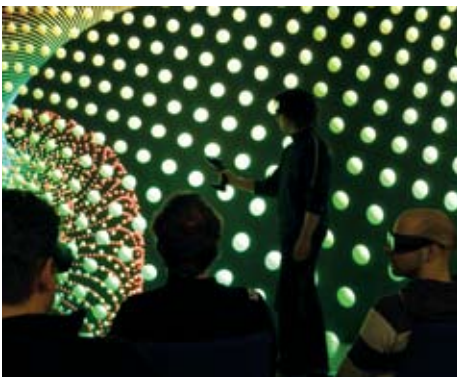


**Christie advanced image processing – Vista Spyder**

The Christie Spyder X20 is a versatile hardware-based video processor combined with the flexibility of a universal routing switcher that enables large megapixel displays with increased frame rate capabilities for new levels of visualization functionality.

What separates the X20 from everyone else is its total capability package at a high frame rate. The X20 supports up to 20 mpx bandwidth at up to 120 Hz frame rate with source inputs/ outputs up to WQXGA (2560 x 1600) resolution combined with the capability to rotate the image for portrait mode displays, without bandwidth limitations.

Users can take any 2D or 3D source format and blend, window, mix, scale and then route the signal to any destination – quickly and easily. The X20 allows for ultra high-resolution digital inputs and outputs, along with extra flexible display support and an amazing source-overlapping capability.



◀ University of Siegen 3D lab

At the University of Siegen, Germany, the Faculty of Electrical Engineering and Computer Science decided to set up an impressive 3D installation in their Virtual Reality lab. They created a presentation room with an area of about 50 square metres that has room for up to 30 people. This is an absolute novelty, because it is technically quite advanced. A half-cylinder and floor projection in a room about 5 metres in diameter and 2.6 metres in height allows the users to work interactively in a computer simulated, virtual environment.

Mounted in four stereoscopic pairs, a total of eight Christie DS+300W projectors are used for the projection onto the cylinder. The floor area is fed by another four Christie DS+300W. These 1-chip DLP® projectors are the predecessors of the new Christie DS+305W models, and like these, they are especially well suited for the 3D environment due to their 10-bit image processing, small footprint and light weight.

Partner: Viscon

▼ Christie’s advanced image processing – the Vista Spyder – is the only system that allows you to simultaneously view both 2D and 3D applications. It allows for complete functionality and compatibility with any source with any configuration of projection displays.







▲ University of Western Ontario, Faculty of Health Sciences Virtual Reality Theatre, London, Ontario, Canada

Tim Wilson, Professor of Anatomy, Faculty of Health Sciences, University of Western Ontario, describes his new 3D Virtual Reality Theatre as "the imagination tool of the millennium". Western's new "anatorium" is the first of its kind in North America. The Western Faculty of Health Sciences is at the forefront of innovation into research and education in the Health Sciences and is committed to providing the best student experience among Canada's research-intensive universities.

Christie installed and integrated two SXGA+ Mirage Series projectors displaying passive stereo for UWO's ground-breaking 3D teaching theater

Previously, there were no labs offered in anatomy. Now between 800-1200 students participate in the classes. The 3D lab features informal tables and chairs as well as stadium seats and benches – most of which are covered with plastic models of various anatomical parts. Full size skeletal models balance either side of the screen – but it's the visual phenomenon on the screen that can be turned to any viewing angle that truly "deepens" the experience.

#### Corporate offices

Christie Digital Systems USA, Inc  
USA – Cypress  
ph: 714 236 8610

Christie Digital Systems Canada, Inc.  
Canada – Kitchener  
ph: 519 744 8005

#### Independent sales consultant offices

Spain  
ph: +34 91 633 9990

Italy  
ph: +39 (0) 2 9902 1161

South Africa  
ph: +27 (0) 317 671 347

#### Worldwide offices

United Kingdom  
ph: +44 (0) 118 977 8000

Germany  
ph: +49 2161 664540

France  
ph: +33 (0) 1 41 21 44 04

Eastern Europe and  
Russian Federation  
ph: +36 (0) 1 47 48 100

Dubai (United Arab Emirates)  
ph: +971 (0) 4 299 7575

India  
ph: (080) 41468941 – 48

Singapore  
ph: +65 6877 8737

China (Shanghai)  
ph: +86 21 6278 7708


China (Beijing)  
ph: +86 10 6561 0240

Japan (Tokyo)  
ph: 81 3 3599 7481

Korea (Seoul)  
ph: +82 2 702 1601



For the most current specification information, please visit [www.christiedigital.com](http://www.christiedigital.com)

 Copyright 2009 Christie Digital Systems USA, Inc. All rights reserved. All brand names and product names are trademarks, registered trademarks or tradenames of their respective holders. Canadian manufacturing facility is ISO 9001 and 14001 certified. Performance specifications are typical. Due to constant research, specifications are subject to change without notice. Printed in Canada on recycled paper. 2488 Jun 09

**CHRISTIE®**