

# CHRISTIE MYSTIQUE

Automated camera-based  
alignment software

Auditoriums

Casinos, cruise ships & hotels

Enterprise venues & boardrooms

Giant screens & dome theaters

Live events & conferences

Museums & cultural attractions

Projection mapping

Rental & staging

Sports venues & theme park rides



**CHRISTIE®**





# UP AND RUNNING IN NO TIME

^ Projection mapping on the ice at NHL team Vegas Golden Knights, T-Mobile Arena, Las Vegas, USA. Photo courtesy of the Vegas Golden Knights. System design and installation by Image Engineering.

## Perfectly aligned. Day after day.

Multi-projector arrays, projection mapping and complex screen shapes and surfaces require expert image configuration, alignment, warping and blending - processes that can take hours of painstaking work.

Christie® Mystique™ is an automated camera-based alignment and recalibration solution that lets you quickly install, align, calibrate and maintain multi-projector systems.

**CHRISTIE®**   
MYSTIQUE

***"Mystique was a great option within (the Vegas Golden Knights) installation. They're able to automatically realign the entire system in between 12 and 15 minutes. They can actually run it before every game to make sure alignment is perfect."***

*Ian Bottiglieri, Director of Project Management, Image Engineering*

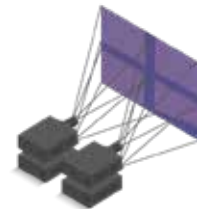
# CHRISTIE OFFERS FIVE EDITIONS OF MYSTIQUE

Christie® offers five editions of Mystique™. Each edition is designed for specific screen types and applications.



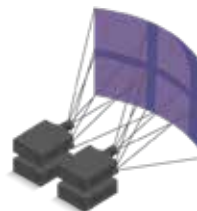
## Lite Edition

- › Simple blending of up to three Christie projectors on flat screens and surfaces. Exclusive to Christie projectors, Mystique Lite is available for download at no additional cost.



## Essentials Edition

- › Projection stacking and simple blending on flat screens and surfaces.



## Pro Venue Edition

- › Projection stacking and blending including easy alignment on flat and cylindrical screens and surfaces such as stages, basketball courts and ice rinks.



## Premium Edition

- › Projection stacking, blending and alignment on large-screen applications which require more than one camera to capture the entire screen. Screens can be flat, curved or custom shaped, including domes and 360-degree screens.



## Large Scale Experience Edition

- › Projection stacking, blending and alignment on large-screen applications which require more than one camera to capture the entire screen. Screens or surfaces can be flat, curved, custom-shaped or domes. Ideal for applications like theme park dark rides, flying attractions, giant screens, dome theaters and 3D projection mapping on buildings, landmarks or objects.

# COMPARE FEATURES

		Lite Edition	Essentials Edition	Pro Venue Edition	Premium Edition	Large Scale Experience Edition
Cameras, projectors, screens, support	Number of cameras	1 webcam* (not supplied)	1	1	Unlimited	Unlimited
	Number of projectors	Up to 3 Christie projectors in a horizontal array**	12***	Unlimited****	Unlimited	Unlimited
	Supported screen shapes	Flat only	Flat only	Flat or cylindrical screens	Flat, curved and custom-shaped screens and surfaces, including domes*****	Flat, curved and custom-shaped screens and surfaces, including domes, buildings, landmarks and objects*****
	Christie Pandoras Box <sup>†</sup> support		•	•	•	•
Recalibration features	Manual recalibration	•	•	•	•	•
	Automatic recalibration (camera-based)			•	•	•
	Automatic recalibration (screen markers)				•	•
	Christie Guardian		Optional	Optional		
Content layout modes	Christie Mystique Operate		•	•	•	•
	Wallpaper (basic)	•	•	•	•	•
	Wallpaper (advanced)			•	•	•
	Fields of view				•	•
	Fields of view (collimated)				•	•
	Projector centric					•
Additional features	UV map					•
	Alignment for surfaces with fixed features/markings such as sports playing surfaces or stages			•	•	•
	Alignment for 3D projection mapping					•
	Rear-projection support		•	•	•	•
Dual-screen mode					•	

\* Supported webcams: Logitech c920 and Logitech c920s

\*\* Warping and blending only. No stacking. Supported projectors: Current Christie HS Series 1DLP® projectors, Boxer Series, Crimson Series, 4K40-RGB series, Griffyn 4K32-RGB, and current Mirage Series projectors except M Series models.

\*\*\* Supports up to 12 projectors in a 2 high x 3 wide configuration, double-stacked

\*\*\*\* Number of projectors limited by capable resolution of the single camera

\*\*\*\*\* Screens include primitive shapes including flat, curved or dome shapes, or by importing a screen model. Custom screen shapes should be smooth, continuous screens



# SUPPORTED SCREEN TYPES

Christie® Mystique™ works with screens and surfaces of all shapes and sizes.



Example of a flat screen



Example of a dome. Photo courtesy of Great Lakes Science Center



Example of projection mapping onto an object

## Flat and cylindrical screens

For flat and cylindrical screens and surfaces, Christie Mystique Essentials and Pro Venue Editions provide easy-to-deploy, single-camera solutions to quickly warp, blend and stack projectors. With Mystique Lite and an inexpensive supported webcam, you can warp and blend up to 3 Christie projectors in a horizontal array on flat screens or surfaces.

## Complex screens and dome theaters

Christie Mystique Premium and Large Scale Experience (LSE) Editions are ideal for complex and smooth screen shapes, including wave shapes, domes, or toroidal screens. Using integrated primitive screen shapes or imported 3D models of your screen shape, Christie Mystique can support the most complex projection layout, with any number of projectors.

## Buildings, landmarks, objects and other surfaces

Christie Mystique LSE Edition provides automatic, multi-camera-based recalibration for 3D projection mapping without the need for marker points. This reduces complexity and costs by saving hours of labor-intensive manual alignment and blending. LSE Edition also automatically corrects for projection drift ensuring visual quality stays optimized. A robust tool, LSE Edition is indispensable for inexperienced and highly-skilled projectionists alike.

# CAMERA SELECTION

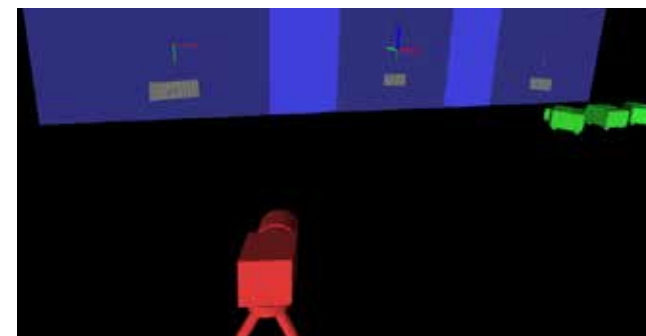
Christie Mystique<sup>1</sup> offers a variety of cameras and lenses which are pre-calibrated as a pair to ensure maximum image quality.

## The number of cameras depends on both:

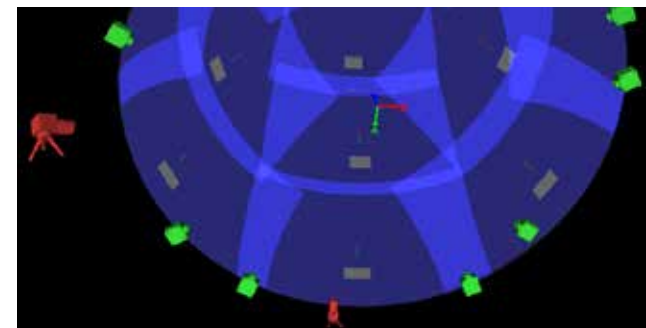
- Where they can be placed in relation to your projection surface
- The resolution of the screen in relation to the camera

You can use the [Christie Mystique camera calculator](#) to estimate if a single camera and lens combination is sufficient for your screen.

Christie can help you design a layout that works for multi-camera systems.



Example of a single-camera configuration



Example of a complex, three-camera configuration

## Mystique camera calculator

Align content across multiple 3DLP® and HS Series 1DLP projectors in a fraction of the time it takes to achieve the same results manually.

The software works in conjunction with Christie Twist™ to warp and blend projected content seamlessly in a single display. Use the calculator below to input your projection specifications and find camera options for Christie Mystique™ Essentials Edition and Pro Venue Edition.

### Tell us about your setup

	Horizontal	Vertical
Projector Resolution	1920 px	1080
Number of Projectors	2	1
Blend Overlap	20 %	20
Screen Size	3.5 in	2.0
Screen to Camera Distance	4.5	

### Applicable cameras for your setup

Result	Name	Horizontal FOV	Vertical FOV
✓	SMP GigE POE Blackfly with 8.0mm lens 156-146102-XX	53	45
✓	SMP GigE POE Blackfly with 5.0mm lens 156-114107-XX	79	69
✗	SMP GigE POE Blackfly with 16.0mm lens 156-146102-XX	28	23
✗	SMP GigE POE Blackfly with 12.0mm lens 156-147103-XX	37	31

	Horizontal
Required Field of View	43 degrees
Canvas Resolution	3454 px

<sup>1</sup> <https://www.christiedigital.com/help-center/tools-and-calculators/mystique-camera-calculator/>

<sup>1</sup> Not applicable to Mystique Lite which requires the purchase of a third-party webcam.





# RE-CALIBRATION FEATURES

## Manual recalibration

Recalibration is applied by manually adjusting screen points within the Christie® Mystique™ software and running the calibration process. Typically, this involves repositioning the corner and curvature points within the camera image.

## Automatic recalibration (screen markers)

Screen marker recalibration is typically required for systems using multiple cameras or complex screens. You can realign a system with a single click. It requires embedding a series of LED or laser marker reference points around the projection surface. The marker reference points help against slight movements of projector or cameras.

## Automatic recalibration (camera-based)

Camera-based automatic recalibration is ideal for single-camera, flat screen applications which do not require screen markers. You can realign the system with a single click and automatically adjust for slight movements of the projectors or camera.

## Christie Guardian

Christie Guardian constantly monitors a blended projection system for any misalignment. If Guardian detects a misalignment, it automatically calibrates the image in real-time, quickly, invisibly, and without interruption. Because Guardian eliminates the need for visible structured light patterns, audiences are unaware of any problem. Unique to Christie, Guardian is supported by Christie D4K40-RGB, Roadie 4K40-RGB, Griffyn 4K32-RGB, Boxer 4K30, Boxer 4K20, Crimson Series, Mirage 304K, Mirage 4K32-RGB, Mirage 4K40-RGB and Mirage SST projectors.

## Christie Mystique Operate

Christie Mystique Operate provides a simple, browser-based experience for initiating a camera-based or screen marker recalibration run. It supports a REST API, which allows third-party applications to trigger the recalibration process.

^ Projection mapping the Lower Mississippi River Model at Louisiana State University helps the Coastal Protection Restoration Authority communicate what's at stake in what experts call the Coastal Crisis.

Photo courtesy of Louisiana State University Center for River Studies  
Partners: Interstate Electronic Systems and Theatrical Concepts, Inc.

*With 20 projectors displaying one seamless image, the river model is a perfect application for Mystique. "It was the easiest part of the installation. It was perfect. I cannot say one bad thing about it."*

*Mike Rideau, Managing Partner, Operations, Interstate Electronic Systems*



# CONTENT LAYOUT MODES

## Wallpaper (basic)

Ideal for systems using a matrix projection layout, this mode is used for simple projection set-ups with a common overlap between each section and will support stacked projection systems. Users must provide a horizontal and/or vertical blend overlap expressed as a percentage or as pixels.

## Wallpaper (advanced)

Designed for complex blended or stacked display types. Typically used for flat or curved (single axis) displays. For each content channel, the user provides left, right, top and bottom channel extents.

## Fields of view

This is an advanced projective layout mode used in simulation of other real-time content solutions, where content is rendered from a single eye-point. Content channels are defined by providing the frustum details (yaw, pitch, roll and field of view settings) along with the eye-point. It can accommodate complex projection layouts with irregular overlaps and other features.

## Fields of view (collimated)

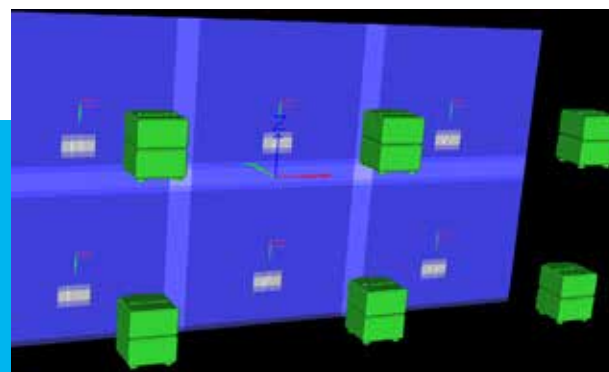
Fields of view (collimated) mode is primarily used in simulation scenarios where the user is looking at a spherical mirror showing a reflected image of the display. Content channels are defined by providing the frustum details along with the eye-point. The system defines the placement and size of the mirror.

## Projector centric

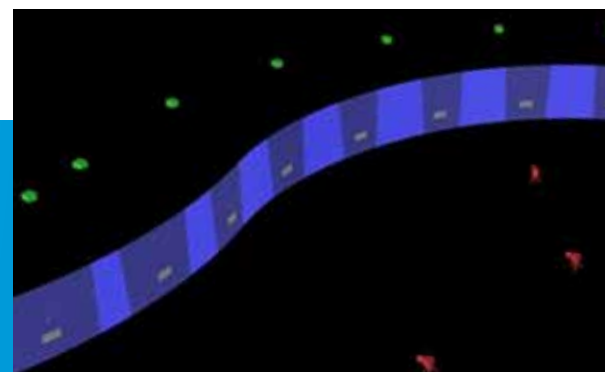
This mode is ideal for projection scenarios where content is pre-rendered based on the planned position of each projector channel. It can minimize the amount of warping applied to each channel on subsequent alignment runs. Christie Mystique can apply small warp adjustments to account for discrepancies between the planned projector position and the actual projector position. Projector centric mode is often used with theme park dark rides.

## UV map layout

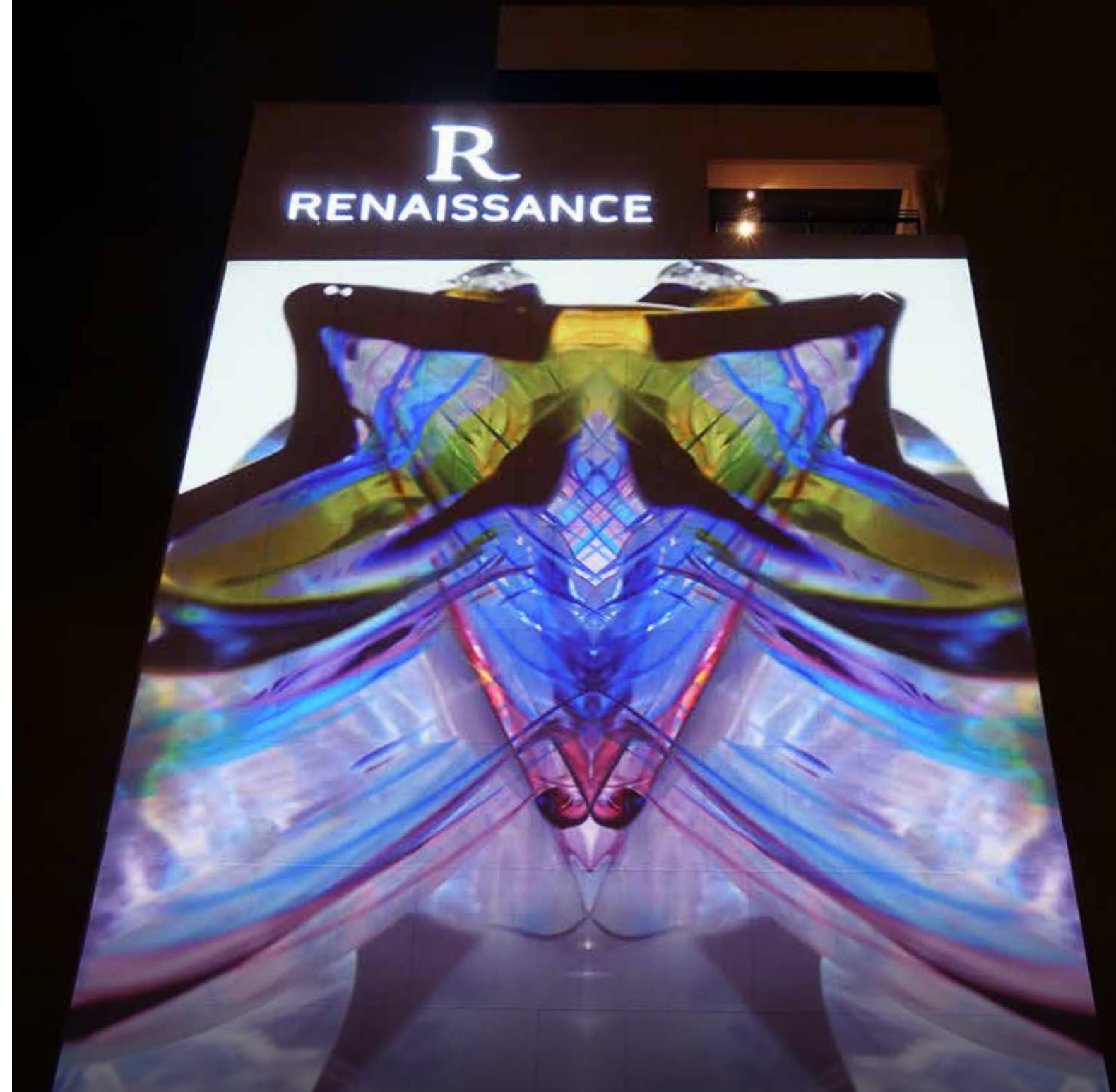
Use this feature for 3D projection mapping when a 2D image needs to be projected to a 3D model's surface to act as a texture map. UV map layout mode is only available for Mystique LSE Edition.



Example of wallpaper (basic) mode on 2 high x 3 wide, double-stacked projection array



Example of a wallpaper (advanced) layout



Example of a permanent projection mapping installation on the Renaissance Toledo Downtown hotel's facade in Ohio. The installation is a public art piece titled 'Mindblown Toledo'.

Photo courtesy of Integrated Visions Productions  
Partners: Integrated Visions Productions and Atlanta Soundworks, Inc.



Christie D4K40-RGB ›  
 Roadie 4K40-RGB  
 Mirage 4K40-RGB

Christie Mirage SST ▼

◀ Christie Crimson Series

▼ Christie HS Series

▲ Christie Griffyn 4K32-RGB  
 Christie Mirage 4K32-RGB

# PRODUCT COMPATIBILITY

## Christie projectors

With a broad choice of compatible projectors, it's possible to specify a Christie® Mystique™ solution for a wide-variety of applications and budgets. The following Christie projectors support Mystique:

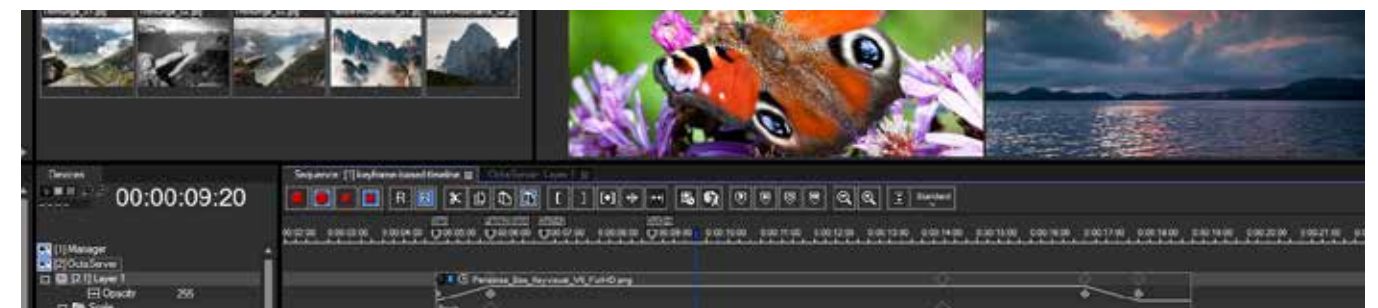
Products	Models
HS Series	<ul style="list-style-type: none"> <li>› 4K7-HS and 4K10-HS</li> <li>› D13HD2-HS and D13WU2-HS</li> <li>› D16HD-HS and D16WU-HS</li> <li>› D20HD-HS and D20WU-HS</li> </ul>
Boxer Series	› Boxer 4K30 & 4K20
4K40-RGB models	<ul style="list-style-type: none"> <li>› D4K40-RGB</li> <li>› Roadie 4K40-RGB</li> <li>› Mirage 4K40-RGB</li> </ul>
Eclipse	› Christie Eclipse
Griffyn Series	<ul style="list-style-type: none"> <li>› Griffyn 4K32-RGB</li> <li>› Mirage 4K32-RGB</li> </ul>
Crimson Series	› Crimson HD31 and WU31
Mirage Series	› Mirage SST, 4K32-RGB, 4K40-RGB, 304K

## Christie Pandoras Box

Christie Mystique<sup>2</sup> integrates directly with Christie Pandoras Box Version 6, enabling automated camera-based alignment and calibration for large-scale projections, regardless of the projector you use.

Christie Mystique provides fast, repeatable camera-based alignment for any multi-projector scenario when you use Christie Pandoras Box as a media server.

- › The optional Christie Guardian feature is not supported by Christie Pandoras Box
- › Stacked projection systems require a dedicated Christie Pandoras Box output
- › Blend quality depends on projector quality and cannot be guaranteed for non-Christie projectors



▲ Christie Pandoras Box Version 6 interface

<sup>2</sup> Mystique Lite is not supported through Christie Pandoras Box.



# ADDITIONAL FEATURES

Christie® Mystique™ provides the ultimate level of control for the most demanding multi-projector systems.

▼ Christie Mystique is used in the setup of the 3D projection mapping of the iconic Christie wolf head.



## Alignment for 3D projection mapping

Users benefit from one-touch, automatic, camera-based, multi-projector alignment and blending on 3D surfaces such as buildings, landmarks and objects. With a single click, you can detect any changes in projector or camera position and automatically correct the blended image. This feature uses markerless calibration for 3D projection mapping, eliminating the time-consuming and often costly need for screen or object markers.

## Dual-screen mode

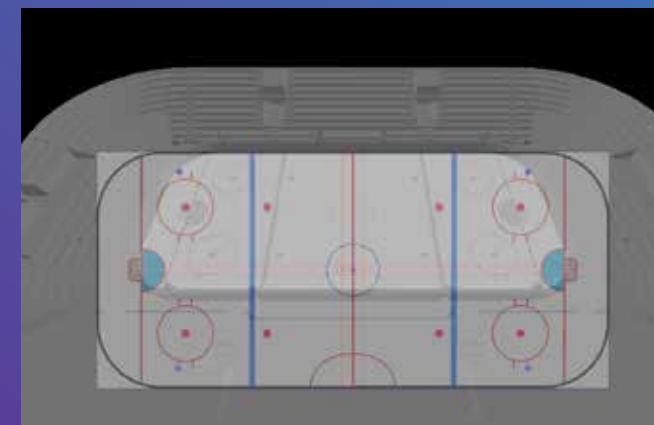
Ideal when content is pre-rendered to a single model and displayed across multiple screens or venues. Dual-screen mode, working in conjunction with projector-centric layout mode, allows you to define two screen models. Using both models, Christie Mystique attempts to correct for error in the physical model by mapping content to the intended location.

## Alignment for surfaces with fixed markings

This feature is ideal for applications such as live stage performances and court or arena projection mapping. Content aligns to a surface with known, measured markings. You can define screen shape and aspect ratio by importing an image that represents the projection surface. That image is then overlaid into the correct location on top of the camera image. This is helpful where content must align to markings or when screen corners are not easily identifiable, such as a hockey rink, where face-off circles can be used as alignment points.

## Rear projection support

Christie Mystique supports configurations using a rear projection screen, where cameras are often positioned in front of the screen. If cameras are placed behind a rear projection screen, results are dependent on the screen material producing an expected image on the rear side of the screen, and extra steps may be required.



^ Playing surface alignment projection system **before** alignment



^ Playing surface alignment projection system **after** alignment



**CHRISTIE**<sup>®</sup>

[christiedigital.com](http://christiedigital.com)

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

Copyright 2020 Christie Digital Systems USA, Inc. All rights reserved. All brand names and product names are trademarks, registered trademarks or tradenames of their respective holders. Performance specifications are typical. Due to constant research, specifications are subject to change without notice.  
CD1424\_Christie Mystique\_Software Brochure\_July-20\_EN

