

# SIM 5R



Photo courtesy U.S. Air Force

Photo courtesy CSC Defense Mission Engineering and Integration Division



## The perfect solution to multi-channel projection

- Raises training efficiency
- Lowers operation costs
- Reduces maintenance costs
- An easy upgrade path for existing maritime, flight, driving, gunnery, and ATC training simulators

- Single chip DLP™ technology
- SXGA+ resolution (1400 x 1050 pixels)
- High brightness
- Extreme bandwidth 16-bit processing
- Dual lamp redundancy, easy service features
- Unique multi-channel projection features

**BARCO**

Visibly yours

# Reshaping multi-channel projection displays

## 1 Optimal multi-channel geometry

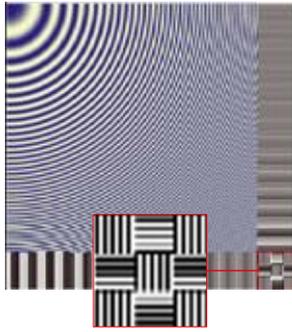


Image scaled using generic bilinear algorithm

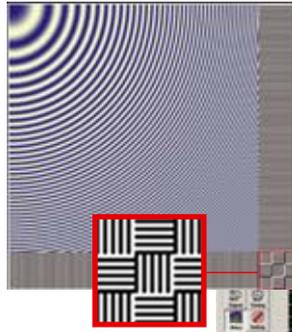
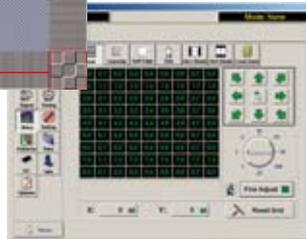


Image scaled using WARP 6™ algorithm



WARP 6™ software interface



### Warp 6™ Advanced Geometry Distortion

WARP 6™ uses Barco's proprietary bi-cubic interpolation. The internal 16-bit upscaling preserves the finest details in the images, without introducing any frame delays or resampling artefacts. Thanks to the built-in WARP 6™ electronics, the SIM 5R can be used in a wide variety of curved-screen applications, ranging from straightforward cylindrical displays to the most severe distortions.

## 2 Inter-channel color matching

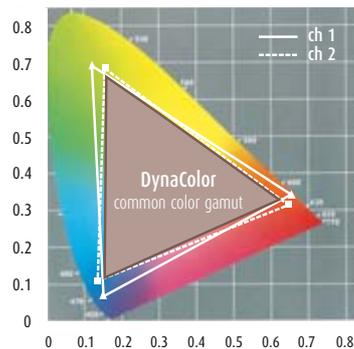
Chromatically matched and highly-optimized optical engines guarantee color uniformity across channels.

### DynaColor™

Barco's DynaColor™ algorithm is an advanced tool for perfect color matching across all system channels. It allows to digitally set the primary and secondary

color coordinates for all projectors. These color coordinates are compared in order to find the common color gamut. Different DynaColor settings can be stored in a single projector for advanced use such as combined mono and stereo projection.

Dynacolor wipes out color differences, to let you see the sky as it is meant to be, wherever you turn your head.



More on Barco's dedicated multi-channel technologies: [www.barco.com/simulation](http://www.barco.com/simulation)



Photo courtesy of U.S. Air Force

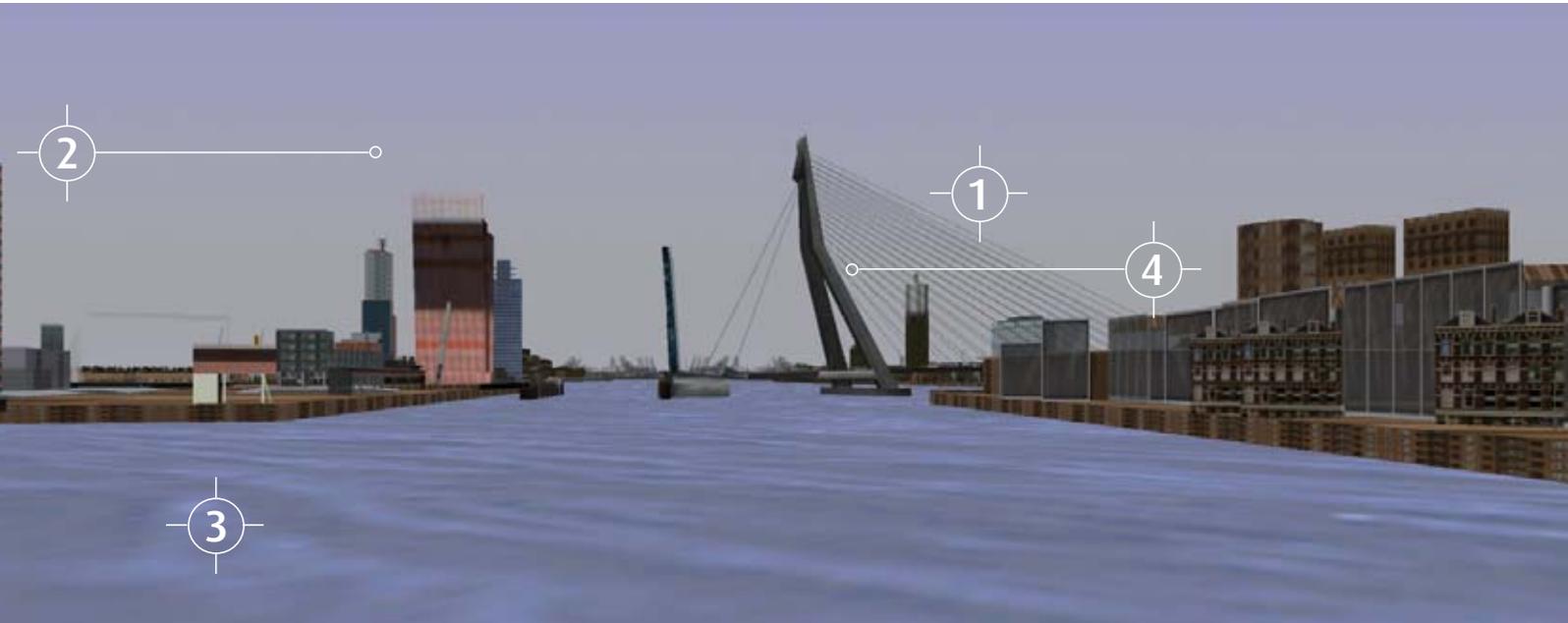


Photo courtesy Link Simulation and Training



Photo courtesy U.S. Navy

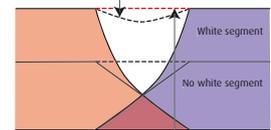
Photo courtesy W



Ship bridge simulator using simulation-dedicated projectors.

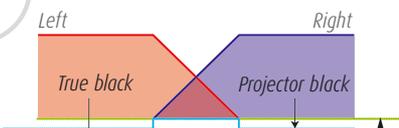
## Excellent blending at high brightness levels

Extra use of the white segment in the DLP™ color wheel improves brightness but introduces white peaking in the overlap zones, making blends visible.



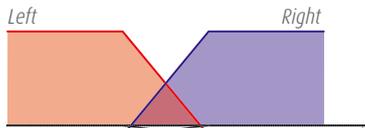
Barco's unique gamma compensation maintains excellent blending at high brightness levels. Optical Soft-Edge Blending is not influenced by white peaking.

## 3 Efficient seamless blending



In multi-channel setups, the non-zero black level of light valve projectors normally leads to brighter overlap zones, especially visible in night scenes.

Barco's flexible ESEM technology adjusts edge blending to a uniform black level.



Barco's proprietary OSEM optical blending filters in the lightpath, limiting the black level in the overlap zone to the separate images, resulting in seamless images with invisible blends, even in night scenes.



Waterbouwkundig Instituut Antwerpen, Belgium

Photo courtesy Lockheed Martin

Photo courtesy Aéroport de Paris (ADP), France

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## Uniform brightness and contrast

### Constant Light Output (CLO)

An integrated, calibrated light meter measures and controls the light output.

- **New and used lamps can be mixed**
- Not all lamps need to be changed at the same time

The xRACU allows for **Linked CLO**, so the brightness of all linked projectors is monitored and adjusted to the lowest value.

### Uniform dimming

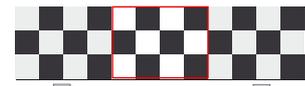
- Increased dynamic range (20:1)
- Accurate dark images
- Contrast level independent from dimming level (black level and Optical Soft Edge Matching do not change when changing lamps)



*Typical dimmer:*  
brighter in the center

*Barco ECR uniform dimming:*  
maintains image quality

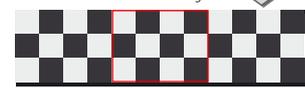
### Constant contrast dimmer



*3-channel system with new lamp on middle channel:*  
non-uniform brightness and contrast



*Unbalanced system:*  
2000:1 contrast on middle channel only



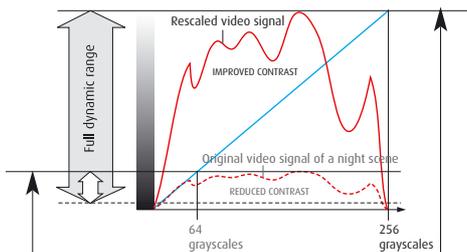
*Balanced Sim 5plus system:*  
1000:1 constant contrast on every channel

Contrast level independent from dimming level. Black level and overlap zones don't change when changing lamp bulbs.

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## Accurate images for night and dusk training

### Extended Contrast Ratio (ECR)



*Dark night scenes typically deliver video signals with reduced dynamic range and almost no contrast.*

*By electronically enhancing these video signals and dimming to rescale to full dynamic range, Barco's ECR greatly improves the contrast ratio and picture quality.*

*Standard image: weak dynamic range*



*ECR delivers full dynamic night scenes.*

### NVGVIEW™ projection



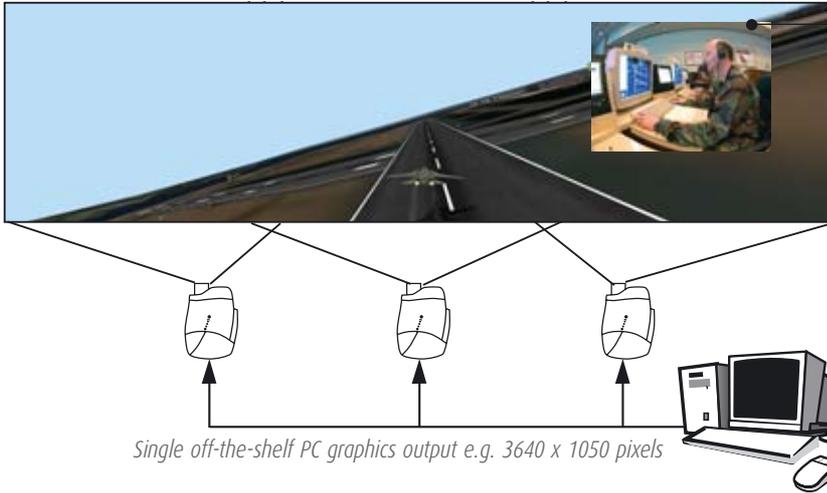
Barco's NVGVIEW system add-on enables users wearing NVG devices to see bright, properly-defined targets and images for true training accuracy and realism.



*Photo courtesy Thales Training & Simulation*

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## Briefing and debriefing applications



### Dual source visualization (PiP)

Allows you to show a debriefing window or mission information by means of the optional video input.

### i-Blend: 3-channel edge-blended panoramic projection from a single PC

i-Blend is a built-in proprietary software that produces three-channel pictures with blend from a single high-bandwidth PC or workstation output (>170 MHz).

- Reduced IG costs
- Cheaper license costs
- Reduced complexity

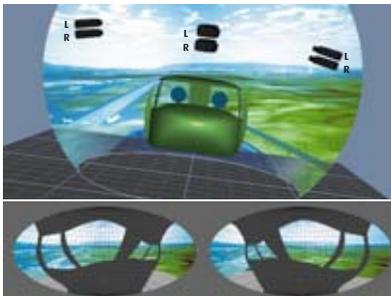
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## Infitec: dual eyepoint viewing



For dual eyepoint viewing, two projectors are used - one for each viewpoint.

Infitec technology filters the color spectrum of the image into parts: one for the position of the left viewer and another for the position of the right viewer. Matching filters in the projector and in the glasses ensure the correct information goes through to the corresponding viewer.



left viewer image - right viewer image

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## Lower total cost of ownership

### Budget-friendly, on-board input switching



- Multiple inputs eliminate the need for expensive external switchers: DVI-D (up to 170 MHz), configurable 5-wire BNC, VGA (D15), optional composite video and S-video,
- Communication inputs and outputs include 10/100 BaseT fast Ethernet (RS232/422)

### Dual lamp system Easy lamp replacement



- Maximum light efficiency
- Single lamp eco-mode doubles maximum lamp lifetime
- Automatic redundancy for optimal system uptime
- No dismantling or realignment for lamp replacement

### Fast cross-system remote control

A fast ethernet connection facilitates central management of several simulators over LAN, either on PC or xRACU (Remote Alignment and Control Unit).



# SIM 5R: highest value for money

## Highest level of near-reality immersive visualization

- Dedicated design based on single-chip, high-resolution DLP technology (SXGA+) for bright, high-contrast images
- Accurate colors and minimal artefacts thanks to integrated BrilliantColor technology
- Accurate display of database scenes during night, dusk, and poor weather conditions with Constant Contrast Dimming Technology
- Integrated bicubic WARP 6™ predistortion for utmost detail on curved and spheric screens
- Uniform brightness and contrast across channels
- Electronic and Optical soft-edge matching for invisible blend zones
- DynaColor algorithm for accurate cross-channel color matching

## Lower total cost of ownership

- Unique built-in features for a seamless, uniform image over multiple screens eliminate the need for expensive, external add-on equipment that often causes disturbing artifacts and extra maintenance costs
- Optimized for easy maintenance through automated uniformity readjustments after a lamp replacement
- Remote, central, cross-system control over LAN (e.g. with the optional xRACU)
- Input flexibility through DVI, configurable BNC, VGA,

## An easy upgrade path for existing simulators

- Identical throw distance to CRT projectors (wide range of lenses, motorized zoom, and brightness adjustment optional)
- Wide range of transversal and vertical lens shift for easy image adjustment
- Extensive Scheimpflug correction allowing off-axis projection

*General specifications available on our website. Extensive specifications for dedicated installations available upon request.*

November 2006



Barco's Presentation & Simulation Division is ISO 9001 certified. The information and data given are typical for the equipment described. However any individual item is subject to change without any notice. The latest version of this product sheet can be found on [www.barco.com/simulation](http://www.barco.com/simulation)

WARP 6, DynaColor, OPTICAL SOFT EDGE MATCHING, OSEM, EXTENDED CONTRAST RATIO and ECR are trademarks of Barco.



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