

# Hong Kong Jockey Club Races Ahead with Vizrt Arena

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## HKJC goes HD with Viz Arena

The Hong Kong Jockey Club (HKJC), the largest horse racing venue in China, has begun broadcasting horse racing events at its Happy Valley and Sha Tin Racetracks in HD through the use of two newly installed Viz Arena systems. Hong Kong Jockey Club broadcasts to all betting offices, on their own television channel, and throughout the venues.

### Coming out in front

Hong Kong Jockey Club had been broadcasting in SD prior its installation of Viz Arena. “We went with Vizrt because of the company’s ability to provide robust services and features in HD,” said OOnagh Chan, Head of Broadcasting Services, Hong Kong Jockey Club. “We consider the current version of Viz Arena unmatched in quality. And having a support team based here in Hong Kong was invaluable during the integration and installation of the Viz Arena software.

“Live sports event broadcasting requires a system that is responsive and easy to use because there is no room for mistakes,” added Chan of HKJC. “The Viz Arena package offers powerful and accurate enhancements to our broadcasts.”



Figure 1: HJJC is the largest horse-racing venue in China

### About HKJC

The Hong Kong Jockey Club is one of the largest racing organizations in the world. Horse racing is the most popular spectator sport in Hong Kong and through its subsidiaries, the Club is the only authorized operator of horse racing. It also operates the Mark Six lottery and under Government authority offers betting on football matches held outside Hong Kong.

The Club is the largest single taxpayer in Hong Kong – HK\$13,115 million in 2007/08, or about 6.5% of all taxes collected by the Government's Inland Revenue Department.

The main drivers for the switchover to Viz Arena were:

- Viz Arena reads all the race information from an Excel sheet. This includes the horses’ names, owners’ names, jockey silk colors, etc. Viz Arena offers a much needed flexibility

- ✦ Calibration with Viz Arena in preparation for a race takes a mere 10 minutes, as opposed to a far longer with the legacy system.
- ✦ Viz Arena features a scalable operation interface, which allows HKJC to take any graphics to air and change them on the fly, without any need for scripting.
- ✦ Sponsored graphics and localized content broadcasted live open up new revenue streams.

### Why Viz Arena?

Viz Arena enables the Hong Kong Jockey Club to superimpose static and animated 3D graphics over the live coverage of races. The solution ensures that the graphics remain in place, regardless of camera movement. The result is a holistic video experience in which the 3D graphics appear to be part of the live coverage.

- ✦ Viz Arena fully utilizes the creative functionality of Viz Artist: 2D and 3D real-time graphics, text, video, logos, images, and animations can be superimposed on the live video feeds, enriching information and creating an enhanced look.
- ✦ New and more sophisticated 3D models are now employed, such as 3D trophies coming up from the turf and spinning.
- ✦ Large screens are now mounted on buildings within eyeshot of the track; not only the race, but also new sponsorships are broadcast on these screens, all enabled by Viz Arena. By just entering the distance of the building from the track, all calculations are made by Viz Arena for optimal broadcast sizing/proportions.
- ✦ Huge improvement in user interface. Previously lots of copy and paste was used from Excel files into the legacy system. Now, there's a drop-down menu for every race. All vital data is populated from external files at the click of the button. Huge time savings with far less frustration and margin for error.
- ✦ Vizrt developed a custom chroma keyer for HKJC. Previously light and weather conditions adversely affected broadcast quality. For example, whenever daylight cast shadows over the stadium, sometimes half of the turf would be covered, so it couldn't be shown. With the new chroma keyer, the system can be used all parts of the track, regardless of different lighting conditions. In this way, daylight, clarity and weather conditions no longer have any bearing at all on the keyers, thus dynamically providing uniform image quality. HKJC is particularly thrilled about this feature, as the weather and lighting in Hong Kong can often be widely variable within a single day.
- ✦ For big races, several cameras are used. In the legacy system, each camera had to be connected to a different system. With Viz Arena, multiple cameras can be connected to a single installation, thereby vastly simplifying operations.

### How it was done

HKJC's relationship with Vizrt is about two years old. Vizrt started out by doing a special project for HKJC that involved real time 3D virtual fireworks in combination with actual fireworks. The fireworks were superimposed behind the real stadium live on-air. Viz Arena was used. HKJC was so impressed, that they realized that Viz Arena's technology and workflow was the right way forward for making the jump to HD.

Subsequently, during the installation period for the major project, the Viz Arena system was calibrated at the Happy Valley and Sha Tin racetracks in two stages. First, camera lenses were calibrated independently from the venue. Later, at the venue a second calibration took place to achieve the best match between the virtual images and real images.



**Figure 2:** Virtual 3D images can be inserted and animated

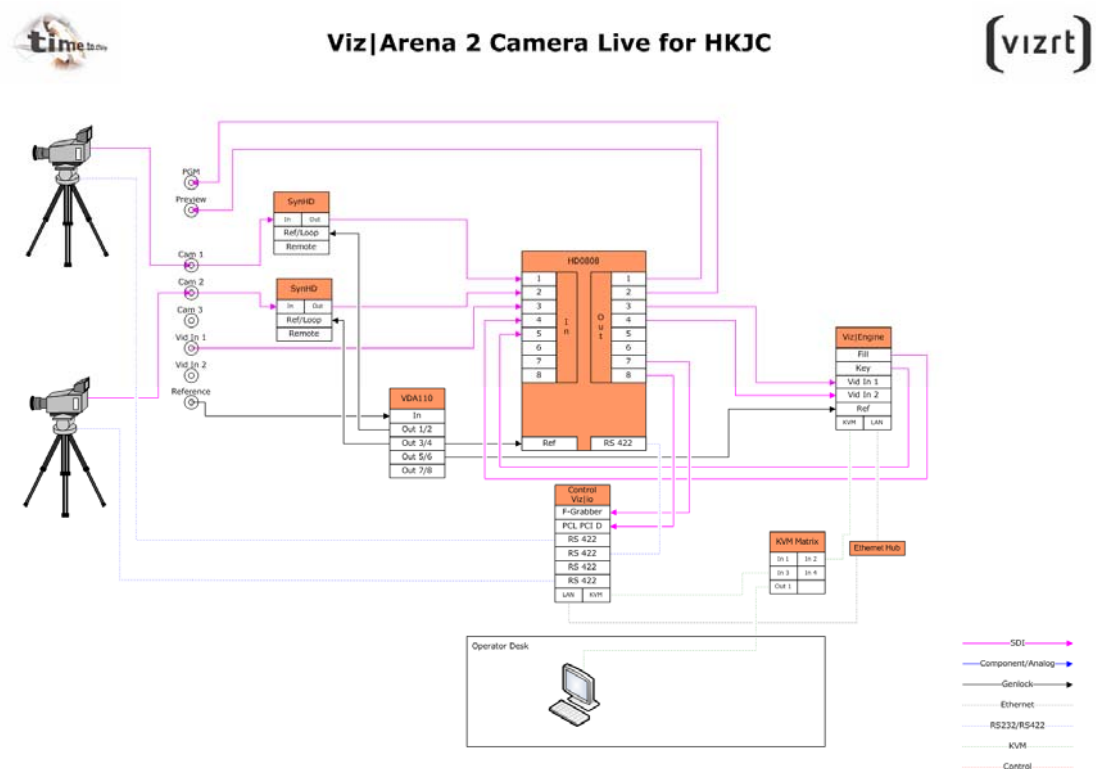
Viz Arena can calculate real-time distance measurements and object placement during live action. Ideal for any sporting event, Viz Arena creates graphics that remain in place while cameras track movement of athletes, cars, horses – whatever is competing on any surface from a race track to a swimming pool. The superimposed graphics can be static or animated 3D graphics.

HKJC uses Viz Arena to create several virtual lines on the track that show how far each horse and jockey are from various points along the track to the finish line. The resulting image helps viewers see the position of each horse and how the horses compare when crossing the finish line.



**Figure 3:** HKJC puts virtual lines on the racetrack

Danny Chiu, lead Customer Advocate handling the HKJC project, understood very well from the outset that lighting conditions are critical when broadcasting horse racing. “It was imperative to have the capability to employ multiple keyers simultaneously,” Danny said. “We brought in developers to work onsite in order to create a customized system for HKJC to address this issue.” Hong Kong Jockey Club had a requirement for four keying zones. Danny and his team came up with a solution enabling an unlimited number of keyers. Needless to say, HKJC was delighted. Having an unlimited number of keyers means that they are now able to assign multiple keyers to specific and separate portions of a field or track to better adjust for sudden changes, which of course is the name of the game in horse racing.

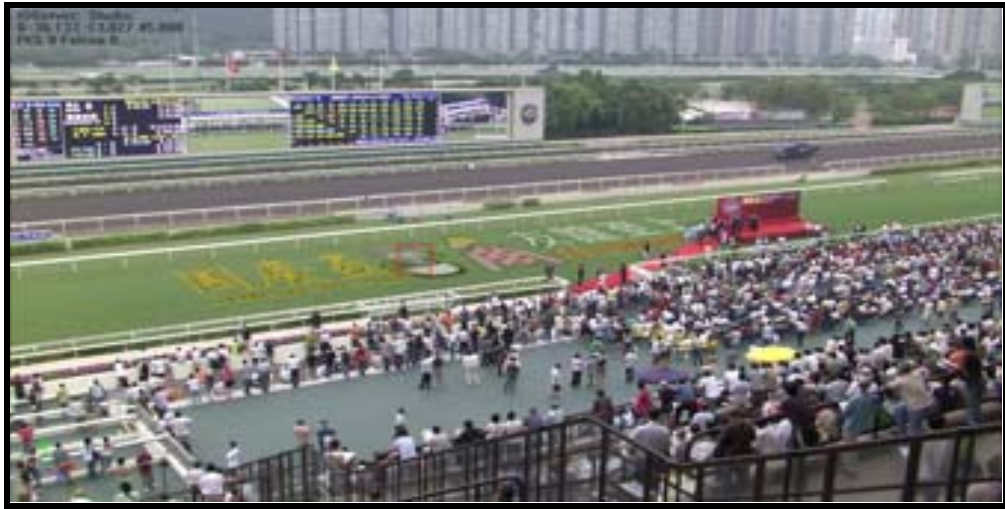


**Figure 4:** HJKC configuration with two cameras

As the camera moves along with the horses, different lighting conditions and shades of green and brown are captured. Since HKJC's previous system had become outdated, the constantly changing lighting meant that a single sample could not be used. Rather, keyers had to constantly readjust during the race to accommodate these conditions. If they missed, the grass and the turf would appear dirty or of varying shades. To solve this, Danny and his team developed another customized solution whereby Viz Arena captures real-time samples of the different shades of chrominance. In this way, keyers dynamically get the optimal broadcast conditions for horse racing.

Another key factor for the quality of the final result is the de-interlacer used on the live video in. Viz Arena employs DVS Centaurus II as the video board of choice for virtual sport enhancements. The DVS enables an adjustable overall delay from as low as two frames up to 10 frames if needed. DVS can work in SD and HD formats.

The newest version of Viz Arena also allows for real time adjustments to keys during the event with a simple mouse click. A portion of the track can be isolated, evaluated and adjusted to produce the best picture quality as the event occurs. Viz Arena includes dynamic, correct-perspective graphical overlays for any playing area. Users can create animated virtual advertising graphics, game analysis, and insert those images live.



**Figure 5:** Real and virtual images mesh to keep attention and create new revenue streams

### **Betting on the right horse**

While the main drivers in the switchover to Viz Arena were technical, the opportunities for new revenue streams are also very clear. Through localized content per broadcast region and the ability to bring live sponsored graphics to air, Hong Kong Jockey Club bet on the right horse by wisely choosing Viz Arena.