



Zero Density

Powered By



UNREAL
ENGINE



CASE STUDY Zero Density & TRT 2

TRT2 Brings a New Perspective to Virtual Studio Production for Broadcast

Adoption of virtual studios for live broadcast had a major upgrade when Zero Density released its disruptive product “**Reality Engine**”, the real-time node-based compositor and **Reality Keyer**, its proprietary keying technology in 2016 which made Zero Density the first company to use Unreal Engine in broadcast.

Since 2016, Reality has transformed broadcast and powered numerous live events, esports, commercials and episodic TV. Different from live production, commercials and episodic projects proceed with live shooting in green screen or LEDs and then use the recorded output in final editorial which eliminates offline rendering and post-production visual effects. **TRT2**, a culture and art channel’s virtual studio and AR workflow is one of the prominent users of Reality in this manner.

Additionally, **TRT2 programs became the epitome of how photorealistic virtual worlds can enhance the storytelling and immerse the audience.**

TRT2 – Channel of Culture and Arts

TRT2 is a branch of the media giant and national television network TRT. It focuses on cultural and educational programming, arts, talk shows and documentaries as a separate channel for 2 years. **In the process of shaping the identity and branding of the new channel, TRT2 decided to adopt the latest virtual studio technology as the bulwark of their production workflow.**

TRT2 built their virtual studio, installed Zero Density products in late December and went on air on 22 February 2019. For a month, the crew learned everything about Reality Engine and started shooting as early as February. **Within two months, TRT2 successfully realized their vision of soulful backgrounds for their thematic stories.** The team started shooting a couple of shows from the virtual studio and increased the number over time. **As of now, the in-house creative team worked on 14 distinct designs for 14 shows.** Every day there is at least one program on TV that is shot inside their virtual set. TRT2 team uses the studio for production for 8 hours during the weekdays between 10 am to 6 PM and 3 hours during the weekends on a normal schedule.



“Reality platform is unmatched. There is no alternative to Zero Density in this area for its quality and usability.”

The Studio

The L shaped green box studio, which is 10 by 8 meters and height of 3.5 meter, a corner studio similar to a rounded square, is equipped with 3 Engines for 3 Sony HDC 1400 cameras. The studio employs the RedSpy camera tracking technology from Stype. As for lenses, TRT2 opted for 2 Canon HJ24ex7.5B and 1 Canon_HJ14EX4.3B on 5.5m tall crane. 2 cameras are on Sachtler Vario Ped 2-75 pedestals and 1 on the crane.

The studio employs 40 Kino Flo 4ft 4Bank portable lighting system and 20 De Sisti high frequency LED Fresnel series in F6 and F10 models.

TRT2 has produced 14 different programs from this virtual studio. The director shoots the program in real-time, but also record-to-tape for minor color grading and cuts. **Switching from one virtual design to another actually means switching from one studio to another with an entirely different light setup if applies. And, this takes less than a minute as each program can be saved as rgraphs to be loaded when needed.**

“As the variety of programs increased, traditional broadcast studios started to have difficulty in responding to demands coming from the broadcast industry.” Says Taşçı. “Especially when the topic touches on culture and art, the studio structure that will accommodate wider opportunities to satisfy both the audience and the producer, which can be suitable for the shooting of many shows under difficult conditions, and which can bear the weight of the content eventually becomes a necessity. **Therefore, conventional studios are unlikely to fit for culture and art content that frequently needs surreal places.**”



“As the variety of programs increased, traditional broadcast studios started to have difficulty in responding to demands coming from the broadcast industry.”

The surrealist outlook of TRT2 is supported by Reality Engine’s high quality compositing capability and advanced keying technology. As a result, the shows with the virtual designs take power from the naturalness of its locations. They do not stand out but melt in the background during the discussions. From time to time, TRT2 also utilizes virtual windows in the best way to support the story.

Mustafa Taşçı explains that "Coming from the fact that the art itself is abstract, creating a blending scene would be seen as a compelling process for the concept of TRT2's programs. Culture and art programs are fragile and its overflowing structures should not contain any restrictions. They should have enough space to give refined information to the audience while protecting its principles and dynamics."



In this context, TRT2 conducts multidimensional programs from cinema to literature, telling a story about specific time of Turkish culture and art history. **Of course, to use the creativity to the fullest and to provide efficiency in terms of time and cost, it turned its face towards high technology and managed to keep up with the requirements of the age.**

The Mystery of the Bosphorus

TRT2 drew in the viewers visually and contextually from the first day it went on-air. **The first time in the channel history, the national culture and arts channel built a state-of-the-art virtual studio, leveraging the broad and nonrestrictive nature of the virtual sets that fit as a puzzle piece to the channel's vision and theme.**

One of the landmark shows of the channel *Movie Like Lives* stood out with a massive audience locked in to watch one of the most iconic movie stars in the 90s hosts equally epic names in a very polished location. The Bosphorus in Istanbul has numerous palaces and mansions by its coast. Renting such a space and getting permit for these ancient buildings are difficult tasks. To create this ordinary but exclusive atmosphere in the background TRT2 conducted many experiments.

TRT2



As a first practical solution TRT2 thought, they could use 360 spherical videos for the view. Although it was working in theory, it did not meet with their expectations because it could not provide enough resolution for details. The scene was demanding more pixels. On the other hand, resolution was not the only challenge to tackle. The data streaming from the rig set conducted with three 4K cameras stitched was gigantic because of the panoramic video. To elaborate, when a panoramic video was created from these videos, the resolution got significantly increased. It was not HD, not Ultra HD, not 4K but a 10K video. Even though TRT2 was concerned about the performance, **the three panoramic videos side by side made a 10K video which ran seamlessly in the background powered by Zero Density's Reality Engine without any compromises on quality and performance.**

"Indeed, the result was dazzling. Not only the audience but also some of the professionals in the industry did not realize whether the scene was real. I received phone calls from these people in the business, asking for the location of the Bosphorus set. The set was so vivid that people started asking if they need a permission to shoot at this location." says Taşçı.



"Timewise, good things come slowly, but Zero Density offers TRT2 the option to be lightning quick, when we need to be."

"We will continue to expand virtual studio coverage. We have plans to use virtual sets for other channels as well." says Taşçı. "In addition to that, no real-time program will be in the upcoming season because it is not our style, but we continue to change some of the existing designs."

Also, there is minimal postproduction need when shooting and recording with Reality Engine because effects are rendered in real-time. Timewise, good things come slowly, **but Zero Density offers TRT2 the option to be lightning quick, when we need to be.**"



"Not only the audience but also some of the professionals in the industry did not realize whether the scene (Bosphorus) was real. I received phone calls, asking for the of the set. The set was so vivid that people started asking if they need a permission to shoot at this location."

TRT2, the culture and arts channel, has showcased an alternative perspective on virtual studio and augmented reality use in broadcast both with application and vision. TRT2 also started to open its doors to live events in its virtual studio. **International Migration Film Festival** opening and closing ceremonies were held in real-time with a special presentation by the Ministry of Interior. Last but not least, TRT World Forum was hosted in TRT2 studio for 2 days and 20 hours of live broadcast.

