Gaming White paper
1.0 Esports – Introduction

The term esport is composed of the terms “electronic and „sport”. It refers to the amateur or professional competition in the form of computer or video games being played in multiplayer mode. The fields of play, the rules to be observed and the end of the game that determines the result will be controlled by the appropriate software and the competition rules. (e.g. the rules and regulations of a league).

Depending on the game, the requirements for the players include motor skills (e.g. hand-eye coordination), fast reaction (e.g. reaction speed) and tactical understanding (game overview, understanding of the game, anticipatory and logical thinking.

To be recognized as a discipline in eSport, certain requirements must be met. According to the German eSport Federation, this includes a sophisticated multiplayer mode. In this mode players must be able to play with or against each other. Also clearly defined rules must be recognizable and it must be possible to determine a clear winner and loser.

The most popular Genres are First Person Shooters (FPS), Real Time Strategy (RTS), Multiplayer Online Battle Arena (MOBA), Massive Multiplayer Online (MMO) Games, Roleplaying Games (RPG) and Sports Simulations.

The different leagues in eSports are similar to the classic European sports model and consist of a ladder system. This means that the clans and individual players in a low league have the opportunity to advance to higher and higher leagues through good performance and tournament wins.
1.1 Esports - Market Overview

Esports are played and watched by millions of people around the world. The number of eSports enthusiasts is growing globally and the 2022 Asian Games in China are expected to include eSports as an official medal sport, which is expected to provide a massive boost to the global esports industry. With rising global interest, more and more companies are seeing esports as a viable way to promote their products and brands, as the platform allows them to reach a large audience and target specific demographics. This influx of sponsorships and advertising revenue will further propel the esports industry.

In 2019, the global esports market will generate revenues of $1.1 billion, up +26.7% year on year.

Around 82% of the total market ($897.2 million) will come from endemic and non-endemic brand investments (media rights, advertising, and sponsorship).

The global esports audience will reach 453.8 million this year, made up of 201.2 million Esports Enthusiasts and 252.6 million Occasional Viewers.

On its current trajectory, we estimate the esports market will generate $1.8 billion in 2022.

The audience is primarily young, with 73% of all esports fans in the under 35 age bracket, and tech-savvy. Many of this group no longer consume broadcast television, radio or read newspapers due to the development of internet alternatives. Esports is starting to attract traditional media businesses and heavy investment through sponsorships and advertisement.

1.2 Esports - KVM’s latest Frontier

Technological Challenges – 240Hz, zero latency, support for all Gaming Peripherals.

Every single one of these massive events requires solutions that can facilitate constant, complex workflows that depend on swift and secure transfers to and from the venue in near real time over public and private IP networks.

Moreover, although a football or basketball game might be broadcast only on a single channel because of exclusive media rights deals, esports events are often broadcast on multiple channels across multiple platforms. Therefore, being able to move content quickly and create dynamic and attention-grabbing coverage under the real-time pressures of a given tournament is vital.
1.3 Conclusion

The bottom line is simple: esports isn’t going anywhere. In 2018 alone, the industry saw $4.5 billion in investment. The market, as it stands, is experiencing immense growth and a before undreamt-of level of legitimacy, and with that comes a trove of needs and opportunities that media-technology businesses should be paying extremely close attention to.

KVM Extenders and switching Systems provide valuable Advantages for all kinds of challenges in the Esports.

Benefits with KVM
zero delay - The kvm-tec PROgamer products have an ultra fast response time with zero delay and are made for the ultra high demands of professional gamers and for all applications behind the scene.

Switching SystemS with Standard Network Components up to 2000 endpoints and superfast Switching
All kvm-tec PROgamer extenders are characterized by ultra fast switching. Due to the in - house developed switching technology of kvm-tec there is almost no limitation in the number of endpoints in the switching system and due to the control via software the single endpoints (PC, monitor etc) can behave passively. Therefore the endpoint only needs the information at the right moment of switching, which results in less data traffic in large systems.

With the Switching upgrade, all extenders can be expanded to the perfect KVM matrix switch in combination with a standard network switch.

delayfree 4K transmission
Delay-free 4K transmission, because each line is transmitted immediately with the kvm-tec method. The signal is regenerated by a re-driver and brought to the right level to allow a perfect transmission. This process is comparable to a ZIP file, where a lot of information is transmitted in a very compact way. Like the ZIP file, kvm-tec transmits each pixel and signal in a very compact form and “unzips” it again. The 4K Extender uses 10 Gbit network technology.

2.0 KVM and Esports – Applications, Benefits, Potential

For the competitive application in the esports field, the unimpaired concentration of the professional is an absolute must. With KVM technology, all gaming computers can be outsourced to a central server room, allowing for greatly reduced noise pollution, reduced heat generation and greater flexibility. A further advantage of outsourcing to the server room is the guaranteed manipulation security of the gaming PC.

2.1 AV Integrators, Broadcast

AV Integrators, Systemintegrators and Broadcast companies have been providing live acquisition equipment and systems for professional sports broadcasts at the highest level for many years, building TV studios, outside broadcast trucks, portable production units, post production suites and other broadcast and playout facilities. That experience translates into esports in the shape of projects like huge Esports Super Arenas, pushing the boundaries of broadcast workflows with the complexity of its live productions.

Secondly, on the major installations we're seeing larger productions running on multiple layers of sub-mixing so directors can make some sense of all the content available to them. That's everything from team/POV cameras and webcams to gamer screens and observer pens, on top of their main presentation camera channels around the venue. Output feeds are being sent to several places at once – venue feeds, live streams, Twitch TV, YouTube. All of this is opening up great opportunities to develop advanced systems that really push the envelope on control room design and automation.
2.2 Broadcast & Post Production

Broadcast or Control rooms must meet the latest technological and ergonomic requirements. A multiple arrangement of monitors comparable to a desktop wall is required.

kvm-tec meets these requirements with the innovative solution of the 4K Multiview Commande, as well as with the software solution Mouse glide & switch. Features like capturing - 4K uncompressed screen shot, downscaling - display of a 4K picture on a full HD monitor, super fast live preview make the application for arenas and events complete.

2.3 Arena & Venues

Arenas for esports are the new Movie Theaters, action, great events, exciting finals and great athletes and spectators who cheer on gamers and heat up the atmosphere before the exciting matches and games that are broadcast to millions of fans. The technology simply has to be right, because the arena is full of hidden cables, PCs are set up and technology is outsourced to the server room. The stages have to be designed flexibly, depending on the number of players. At large tournaments everything is installed ready and the players are only allowed to start the game and make their own settings. Bringing USB sticks, mouse or headsets is an absolute taboo. In the postproduction everything is streamed live in the background and sound, light and graphics are worked on. KVM extenders meet the requirements here with delay-free transmission, switching system and innovative features in the KVM system, such as Push & Get Command to the video wall, or sharing on video walls.

2.4 Gaming Hardware

Esports Gaming Hardware includes high-end processors such as the Intel i9-9900X as well as two models of the high-end GeForce RTX 2080 graphics card and a High End Gaming Monitor with 144-240 Hz. However, it also shows that the gamers have their own preferences when it comes to mouse, keyboard and headset: While PCs and monitors are predetermined in eSports, players can freely choose their mouse and keyboard. The BenQ-ZOWIE mouse and a mechanical gamer keyboard are very often used here. With the keyboard, just like with the mouse and headset, everyone has their own preferences. But it is a fact that almost all gamers today use mechanical keyboards.

High Refresh Rates
The PROgaming Edition from kvm-tec supports frame rates up to 240 Hz in full HD resolution and thus enables super-sharp and delay-free images for perfect gaming.

Applications behind the games
For all applications „behind the games or extended broadcast“ like Broadcast-and Controlrooms, Outdoor broadcasting, Postproduction, Digital Signage & Videowall kvm-tec enables with a wide product range the optimal solution from Full HD up to 4K extenders and a KVM system with a variety of functions.

Only one cable
A single fiber cable can transfer up to 10km at a video resolution of up to 4096 x 2048 bi 60 Hz or 1920 x 1080 at 240 Hz USB and video.

line-to line transmission
The in-house developed line-to-line transmission enables real-time transmission without delay.

Mausmovement without any delay
For the 4KPROgamer an absolutely delay-free mouse movement is required. kvm-tec makes this possible by a perfect in-house developed video compression, which allows a zero latency.
2.5 Professional Gamers

Professional Gamers are highly talented and achieve results in games through daily training, which release emotions. For the gamers it is an absolute must to be able to play highly concentrated and focused. With a camera attached to the player’s desk, enthusiastic fans can follow the game live.

For the players a FULL HD resolution (1920 x 1080) is perfect. In contrast, however, a high image transfer rate is required by the players. Most players prefer a high frame rate over a high resolution, e.g. 240Hz at Full HD.

Exactly here kvm-tec has set new standards with the in-house developed line-to-line transmission technology. In a conventional transmission, each image is analyzed individually (duration approx. 16 ms) and only after 4 images the complete transmission is done. This results in a delay of 64 ms. With the kvm-tec innovation, every line of an image is transmitted immediately. This makes the monitor display absolutely flicker-free, no longer stutters and the lip synchronization is perfect. So the gamer has no delay with mouse and keyboard and therefore realtime transmission.

3.0 kvm-tec G4 PROGamer Serie

The G4 PROgaming Edition from kvm-tec, meets the latest hardware requirements due to in-house technology development and supports refresh rates of professional gaming monitors of up to 240 Hz. This guarantees delay-free (every 4.2 milliseconds a new picture at 240Hz) and super sharp pictures in Full HD and 4K, which allow perfect gaming without input lag. With 240 Hz, aiming, but also the quick differentiation between friend and foe becomes much easier than it is with rates of 60Hz or even only 30Hz.

PROgamer Flexibility

KVM devices need great flexibility in gaming, because in large arenas the units are integrated into a network and on road shows it is necessary that the units can be transported very flexibly and easily with the rest of the equipment (preferably in a hardcase) and can be set up super fast and easily. PROgamer Extender from kvm-tec meet both requirements, because the units are compatible with standard network components and meet the demands of a large matrix switching system up to 2000 endpoints in the arena and the easy going Switching System for gaming on the road.

network security - stay secured with kvm-tec

The PC technology offers the highest security in the network. kvm-tec extenders guarantee this highest security standard, which is used in professional networks, by using standard network switches.

Tamper proof

Due the outsourcing in the server room the PC is not manipulable. The USB Save feature prevents unauthorized copying of files via USB.
“our gear is packed and ready to go”