e-Book

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Optimal Use of Video Systems for K-12 School Security

Creating Safe and Welcoming Learning Environments, and Detecting Problems Early For Faster Intervention

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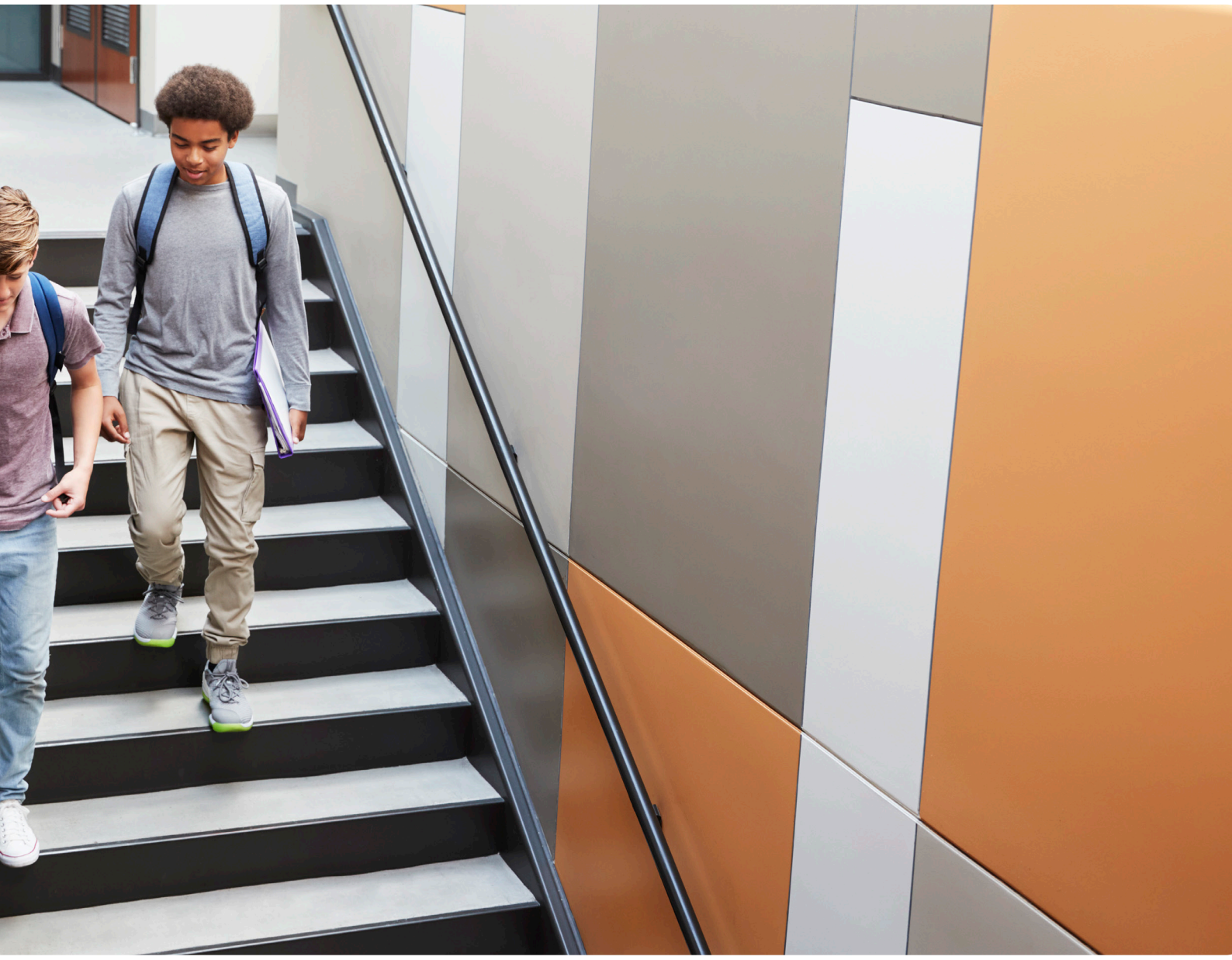


1. Introduction

Year-on-year the U.S. education system ranks in top positions in the world quality index and is consistently one of the top ten performers in the Programme for International Student Assessment (PISA), a study that compares data from 36 member countries. Despite active shooter incidents and serious violence making headlines in mainstream news, U.S. schools continue to be pioneers in providing high-quality learning. The fact that they are serious about addressing the many risks and challenges they now face is evident in increased spending on security technology.

K-12 institutions are also ambitious when it comes to adopting new technologies and testing new approaches to creating safer, more secure environments in which their students can flourish.

In 2020, Omdia produced a report exclusively for the Security Industry Association (SIA) that showed the market for physical security equipment in K-12 (kindergarten to 12th grade) and higher education was worth $716 million in 2020 with the K-12 segment accounting for around 56 percent of the total spend. More recently Omdia reported that following suppressed spending in 2020, caused by COVID shutdowns, traditional video surveillance revenues are set to grow at a total CAGR of 7.1% to 2025 as the sector to normal operations. While demand for thermal body temperature solutions are understandably declining, as schools resume normal life they are once again looking for the best value security deployments to improve their physical security defenses.

There's no question that video systems have an important part to play - if they are designed, deployed, and operated effectively. In this eBook, we highlight key factors that will contribute to the successful use of video security in schools. Our aim is to support systems integrators serving the sector, and senior teams within education whose job is to plan for and manage security in a post-pandemic world.

2. Challenges in perspective

The National Center for Education Statics conducts regular safety and security surveys to gather perspectives from a range of stakeholders, including students, teachers, principals, and heads of school districts.

The latest data (2021) highlights a range of concerns, including shootings, victimization, fights, weapons, illegal substances, and discipline.

It is worth noting that school-associated violent death is rare (for example, 56 recorded deaths in the year through to June 2018, including 9 suicides). Yet the death of 56 young people is still too many and violence and crime remain a top concern for most staff and students. 1.4 million incidents were reported in the year through to 2018. Not surprisingly, in 2019 around 5% of students aged 12-18 reported being afraid of attack or harm during the school year (compared with 3% outside the school year), while 22% of students also reported using or being sold illegal drugs over the same period.

Adding to the challenges, in 2021 and beyond, schools need to address these issues against a backdrop of COVID-19. The pandemic has increased the number of young people suffering from mental health issues, and with the issue politicized, schools also have also had to navigate a tricky line between reducing infection risks and dealing with parental disgruntlement over mask-wearing mandates.

3. A Layered Approach

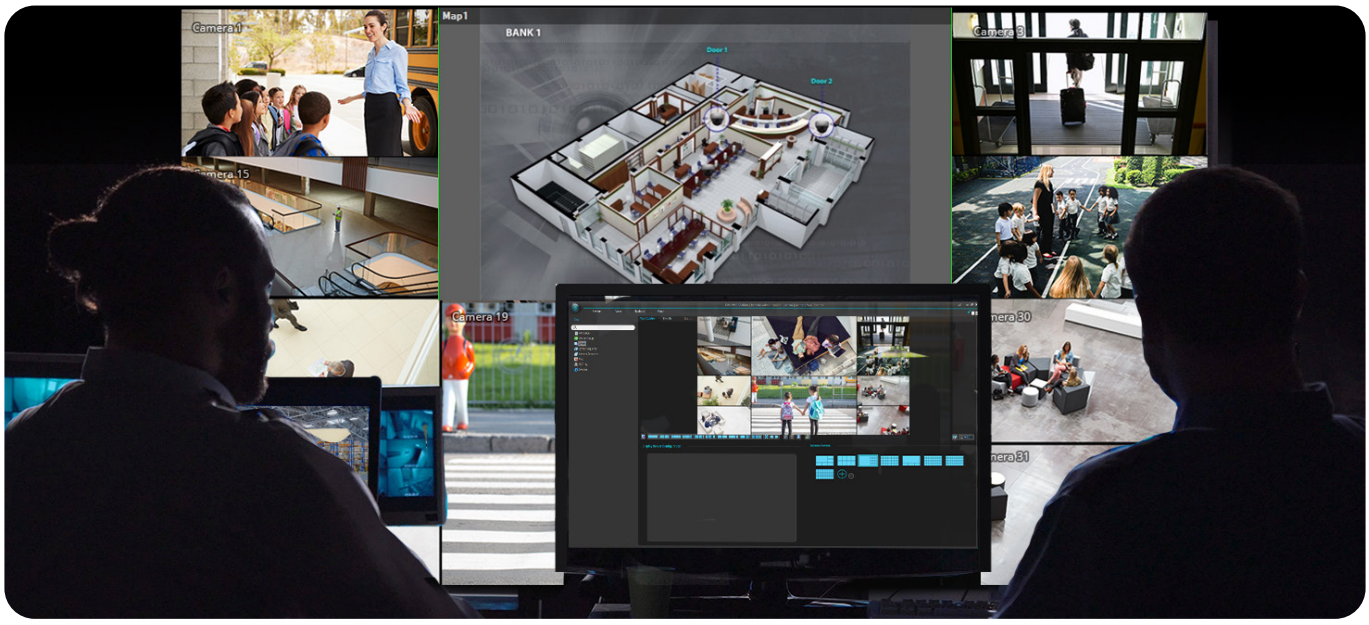
When used well, video acts as a resource-multiplier for schools and makes other measures more effective. This makes it one of the best value security and safety tools available.

Where schools employ School Resource Officers (SROs) video can give those individuals or teams a clear picture of activity on-site, provide an early warning of potential threats, and allow faster responses.

Video can help teach staff to identify problem behaviors and support them in intervening earlier in negative behavior cycles, thereby resolving conflicts sooner and being more confident that they are making fair judgments.

Yet schools and their systems integrators have a tricky balance to strike, keeping schools open while defending the perimeter and making internal areas feel safe and welcoming. Best practices can be applied both district-wide or by school-to-school, implementing layered protection for perimeters, parking lots, building structures, and interior areas. A comprehensive mix of well-positioned cameras and flexible VMS is key to this approach.

4. District-Wide Resilience



Many schools are included in district-wide preparedness strategies for dealing with everything from day-to-day events to more complex challenges such as severe weather and active shooter threats.

Surveillance system upgrades are often included in these strategies. For district-level implementations, it's essential to thoroughly evaluate VMS platforms to ensure that software is scalable and flexible. The VMS needs to integrate easily with other core safety, security, and building management solutions. And it should not place a heavy burden on operating costs.

Today's generation of more powerful but affordable VMS delivers on these priorities, allowing a distributed video surveillance architecture that is robust and flexible, with centralized monitoring run in tandem with distributed command and control at each school. This approach gives the district's central control room a view over the entire estate,

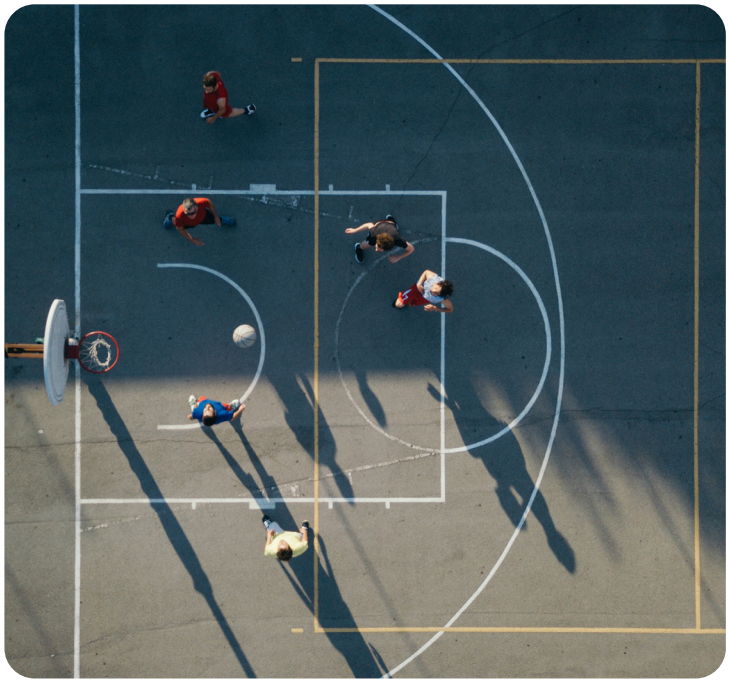
while at each school, authorized SROs and teaching staff have access to live and recorded footage, enabling them to manage local events.

The choice of VMS should include protection against loss of footage in the event of a range of fault conditions including network instability and power outages. If any part of the surveillance infrastructure fails, critical failover protection will recognize the problem and switch to a redundant system to maintain an unbroken video evidence chain.

For district-wide resilience, many schools now consider positioning cameras beyond the immediate perimeter. Cameras located some distance from the line of demarcation, especially at campuses with more extensive grounds, provide a strengthened first layer of security. This can help schools detect, identify and take action against known perpetrators before they reach school boundaries, especially if they work in collaboration with local police and public agencies. For example, video can enable earlier action against thieves known to habitually target students for high-value school-issued laptops, smartphones, and other valuables.

To manage a solution of this size and scope, security managers will also look for advanced and dynamic video wall solutions that will give their team a superior situational overview to facilitate rapid information relay, event response, and provide a range of viewing layouts, maps, and alarm information.

5. From the Parking Lot to the Playground



To protect building perimeters, parking lots, playgrounds, and playing fields, correctly positioned high-resolution cameras with powerful zoom capabilities can provide exceptional wide-area coverage. Exterior cameras do not deter crime, but provide a duty of care and reassure staff using walk-ways and parking lots, particularly at night. External cameras also have an intrinsic role in ensuring student safety in playgrounds and playing fields, by supporting faster and appropriate responses to slips and falls through to more serious injuries.

Powerful options include 4K PTZs, mounted on existing lighting poles and on buildings; and smaller bullets and domes targeting higher risk exit and entry points. Schools that are looking for storage and band-width savings can also benefit from specialist outdoor 2MP cameras that still capture high-quality images in all lighting conditions thanks to specialist light-enhancing technology.

LPR can further help secure parking lots and automate vehicle access. For example, authorized vehicle lists will allow staff and parents to gain smooth entry to dedicated parking spaces. Integrating visitor management systems will also streamline the arrival of guests, contractors, and regular deliveries such as catering while preventing the entry of unauthorized vehicles. And the latest AI-enhanced solutions are an increasingly practical option for schools, delivering the benefits of simple configuration and accuracy over 98%.

To cover exterior areas economically, users can also take advantage of the recent advances in HD-TVI analog. These deliver high-definition image capture while leveraging existing infrastructures and avoiding expensive engineering works. However, it's important not to add unnecessary cost or complexity by ensuring users can still manage analog cameras and devices from the same VMS interface.

Video intercoms at key entry points also allow staff to vet visitors before granting them access into buildings such as reception areas. This gives security staff critical time to assess potential threats from assailants and intruders and respond appropriately.

6. Safe and Secure Learning Environments

Video allows full 24/7 monitoring premises with enhanced management oversight, helping maintain schools as safe learning environments. It is one of the best tools for tackling a range of common problems: petty crime, smoking and vaping, drug misuse, vandalism, and serious threats to school property, buildings, and infrastructure out of hours. Video tech can also strengthen infection prevention measures at times of increased viral risk, with functions such as building occupancy monitoring, social distancing monitoring, and face-mask policy compliance monitoring.

While many schools avoid surveillance in classrooms wherever possible, surveillance cameras have an important role to play in areas such as gymnasiums, corridors, cafeterias, lobbies, media centers, and communal facilities. Integrators will need to look for a manufacturer that can provide an affordable yet comprehensive range of cameras with rich feature sets to suit these varied settings.

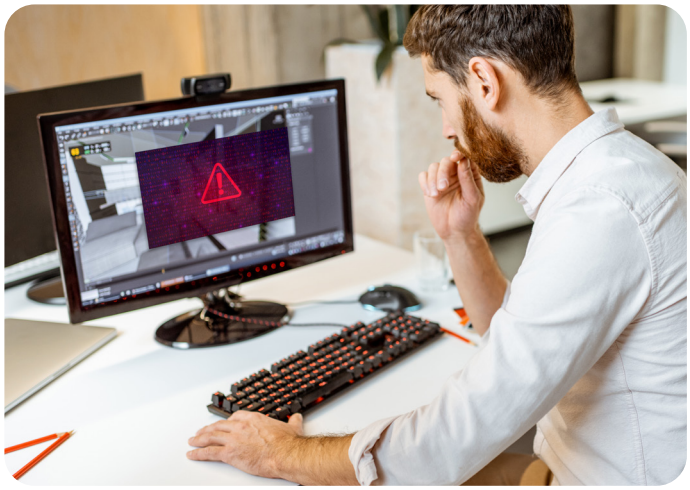
For most internal learning environments, discreet and low-profile cameras are popular, especially fisheyes, as these will provide reliable, comprehensive area coverage in all these locations. Replacing three or four traditional fixed lens cameras, fisheyes are not only more cost-effective but versatile too. They can be mounted on ceilings, on poles, or walls, and they provide protection against threats to students, and staff, and ensure visitor safety. Dewarped footage from these cameras is now of exceptional quality, even out to the image periphery, and will for example allow SROs to intervene sooner in the event of a serious incident or enable teaching staff to deal more quickly with routine problems.

7. Compliance, Federal Funding, and Cybersecurity

Education facilities have access to a variety of federal grant programs, including the Elementary and Secondary School Emergency Relief (ESSER) Fund, the Coronavirus Aid, Relief and Economic Security (CARES) Act, and the Coronavirus Response and Relief Supplemental Appropriations Act.

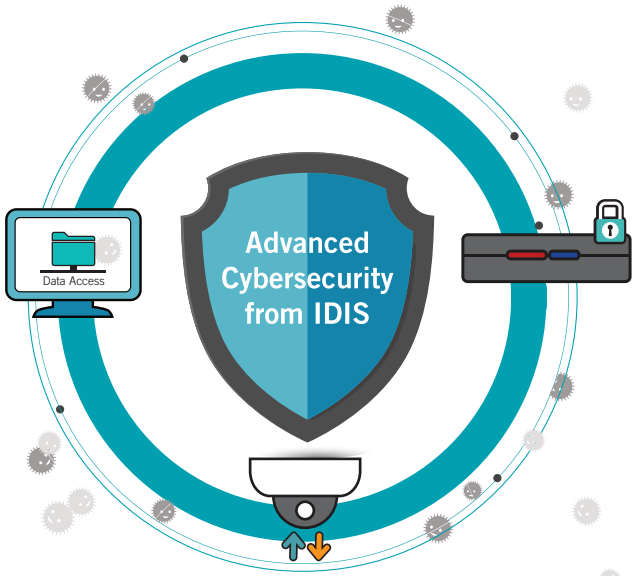
All schools which receive federal funding through grants or loans need to comply with section 889 of the 2019 National Defense Authorization Act (NDAA). This reflects growing concern about the manufacturing origins of equipment, and awareness of potential cyber security risks from Chinese cameras or their components being used as back-doors into networks. In fact, whether a project is federally funded or not, checking for full NDAA-compliance is a wise precaution for any system planner and it will also ensure schools are prepared for the Secure Equipment Act which has now been signed into law, meaning the Federal Communications Commission, (FCC) will block new Chinese surveillance equipment authorizations.

A Government Accountability Office (GAO) report (Nov 2021) assessed the Department of Education's Education Facilities plan for mitigating cyber threats to be significantly outdated. The plan was issued in 2010, since when the cybersecurity risks facing the sector have substantially



changed. Schools have increasingly reported ransomware and other cyberattacks with the potential to cause significant disruptions, further highlighting the importance of securing their IT systems. According to data from K-12 Security Information Exchange, schools publicly reported 62 ransomware incidents in 2019, compared to 11 ransomware incidents reported in 2018.

To protect against hacking – and the risks of malicious actors gaining access to camera feeds, or to school IT networks – integrators should look for video systems with multi-layered protections covering access, transmission, and the security of recorded footage. Look for encryptions that don't impact performance, multi-factor authentication, and firewalls that prevent unauthorized access. For example, with cybercriminals increasingly targeting IoT devices, considering using separate VLANs avoiding school networks that increase the attack surface.



It's also worth evaluating true plug-and-play, end-to-end solutions as not only will they use their own proprietary protocols unfamiliar to hackers, they will also offer an additional layer of defense because devices mutually authenticate each other. This eliminates the need for manual passwords, which can add complexity during installation and maintenance and lead to engineers inadvertently creating cyber loopholes or leaving devices vulnerable.

8. Value for Stakeholders

Community partnerships are important for school security, and wider collaboration often involves many stakeholders, including students, parents, teachers, school and district staff, law enforcement, and the local community.

Stakeholders will have varying interests in any school's performance, but this generally includes concern for the overall success of students, and for safe learning environments that foster community pride and give a good return on tax dollars.

To deliver this value, surveillance solutions need to be flexible, scalable, and futureproof, with the ability to easily integrate third-party safety and security systems, including access control, intruder and fire systems, as well as building management systems (particularly as schools upgrade to newer HVAC systems to reduce infection risks).

As well as up-front (CAPEX) costs, be sure to consider (OPEX) costs in price comparisons. Unfair VMS and analytics pricing models are common in the surveillance industry, with users being charged annual license and device connection fees, hidden charges for functions they never use, or high additional charges to connect extra cameras.

Ease- of-use is also important, for example: allowing non-security staff to conduct rapid investigations and retrieve evidence using automated search functions; using video as a tool for positive behavior management, with high-quality image capture a useful deterrent to anti-social

behavior; reducing individual and corporate liability, with evidence of activity on-site helping to resolve disputes early and avoid litigation; and reducing pressure on staff, including senior managers and receptionists.

Check for backward and forward compatibility, long-term product support, and extended warranties, all of which give schools peace of mind that their investment will last. Future-facing solutions make it easy for users to adopt new tools as they become available. For example, improved deep-learning analytics are enabling highly accurate, AI-powered notifications for intruder, loitering, and objection detection. These eliminate security teams responding to false alarms usually triggered by older cameras with traditional analytics caused by harmless environment factors. This also frees up control room staff from monitoring multiple streams and allows them to focus on critical matters and coordinate multi-user response activities quickly and effectively. Metadata, which is collected and stored by systems using deep-learning, is also now speeding up investigations from hours to minutes.

Whatever the scale of the challenge facing a school, today's more powerful video solutions provide a compelling answer. The best of these new systems act as a force multiplier, reducing costs and taking pressure off security staff, administrators and teachers, so that they have time to engage more positively with staff, students, and other stakeholders, to the benefit of all.

We can show many examples and provide references of videos solutions in action in K-12 and other education settings – get in touch to find out more.

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