



VIEWS FOREVER

Integrator Tunsuna has installed a networked video surveillance system at Scenic World Blue Mountains at Katoomba, using Milestone management software to drive Axis, Canon and Mobotix IP cameras.

KATOOMBA'S Scenic World tourist attraction was opened back in 1945 on the site of the Katoomba Colliery by local entrepreneur Harry Hammon and his sister Isobel Fahey. As a transport operator, Harry had developed a feel for the tourism potential of the pristine vastness of the Blue Mountains and when the chance came to buy the site, he didn't hesitate.

At the heart of this business is the Scenic Railway, which runs on the world's steepest incline, a 52-degree line once used to haul coal up to the cliff top. When they purchased the lease on the mine, in 1945, Harry quickly pressed the little railway into full time service carrying paying customers on the ride of a lifetime.

Harry was a pioneer in more ways than one. As well as being one of Australia's first professional tour operators, he turned Scenic World from a run-down colliery into a world class attraction, making use of whatever was available to get the job done.

The extremes that delighted customers were an operational nightmare for Harry and his team.

Challenges included an intermittent power supply and the post war shortness of materials, but Harry and Isobel persevered.

Harry Hammon's can-do spirit imbues his son, Philip, who is now managing director of the family-owned business that runs Scenic World. Philip is effortlessly hands-on and his direct and engaging manner goes a long way to explaining the huge success he's made of his father's business.

It's easy to under-rate Scenic World...until you arrive. This place is beautiful. The drop to the forested valley floor, the distant row of ridges and the clean smell of a billion trees stop you in your tracks.

The site teems with activity. Dozens of buses fill the coach park and the 3-storey dedicated carpark is filled to capacity. At any given moment on a busy day there will be 2500 visitors on the site and Scenic World clocks up 875,000 visitors a year.

The bustle isn't restricted to visitors. Keeping the site operating smoothly is an everyday job and as Philip Hammon explains, because the site is open

365 days a year with no down time, maintenance is constantly being undertaken by Scenic World's dedicated technical team.

"We call this 'zero operational downtime'," says Philip. "Scenic World operates 9-5 every day of the year."

It goes without saying that achieving zero operational downtime means that high levels of operational efficiency are required. According to Philip, the challenges of the site, including its size and the ruggedness of the terrain it occupies, meant the use of video surveillance to support operations was always attractive. Scenic World was a pioneer of CCTV for site supervision as far back as 1970.

"We first started using video surveillance back in the early 1970s with black and white cameras and coaxial cable running from the bottom of the Scenic Railway to the top," explains Philip. "For obvious reasons it was really helpful to be able to see the bottom station.

"The coaxial cable was the big, fat RG-35 which we needed to handle the 300 metre drop down into the

valley without amplification," he says.

"So the system started with that first single camera and later we added another camera at the top station. To control the cameras I made up a little box with ordinary switching relays in it to switch the TV signal," Philip explains.

"At that time I was told I had to have the correct coaxial switching relays but they were \$200 which was a lot of money in 1974 - I thought bugger that - I'll just use ordinary relays and they worked like a charm and they are still working today."

Another of Philip's projects was the construction of external housings for gigantic full body Vidicon tube cameras and it's a testament to his engineering prowess and instinct for quality that these first housings not only survive but form an integral part of the CCTV system today.

Initially monitoring was undertaken in real time but in the 1980s Scenic World's first recorded security cameras went into the site's souvenir shop.

"We had a multiplexer and a VHS recorder



with tapes in that first installation,” Philip says. “But it was still a very simple system with limited capabilities.”

Scenic World’s next big development was the building of the new Cableway, and Philip says during construction a fibre optic cable was run from the bottom of the Cableway around the boardwalk and up the Scenic Railway incline.

“This was back in 2000 and fibre optic cable was not widespread so it was a challenge for the installers putting it in and there were some unusual characteristics to the installation,” Philip explains.

“The bottom of the cable way is 500 metres from the top, so fibre is the ideal solution for us. This fibre goes into the network in our visitors centre and gets onto the network via a switch. Access from the workstation in the admin building is over another fibre.”

According to Philip, unlike the original system, the new networked video surveillance solution has an operational focus that allows him to monitor equipment on the site.

“The CCTV system has multiple functions but operational support is the key,” Philip says. “If we get an operational problem with any of the three drives, we have an integrated paging system that will automatically page us and report which drive has a problem.

“We then have access to the drive monitoring computers which allow me to read errors from here

and then use the cameras to look at locations,” Philip explains. “That includes being able to go back in time.”

“You can imagine how it helps. At a peak time we might have 2500 people on the site and if something suddenly stops it’s so much easier if we can call the problem up on the cameras and send technical staff to the exact spot with a fuse or whatever is required to get things going again. It’s stress-free.

“The alternative is manually finding the problem and then finding someone to resolve the problem – using CCTV is so much quicker,” he says.

According to Philip, there’s another great benefit of the system’s ability to allow him to view all parts of the site in significant detail, from his office.

“An OH&S issue with a site like this is that you can’t open a ride to the public without first inspecting it, but with the Cableway, you can’t inspect it without riding on it,” he explains. “What the cameras allow us to do is inspect the machinery from a workstation remotely.”

“With the presets I’ve got in the system I can look at anything I want to look at with a mouse click – it’s exactly what I wanted the system to do.”

As well as supporting the technical team, the video surveillance system is instrumental in providing information to Scenic World’s customers on weather conditions.

“As we’re in the mountains the weather is a governing factor in the business,” Philip explains. “It



might be clear lower down the mountains but there will zero visibility in Katoomba. Conversely it can be raining in Sydney and a beautiful day in Katoomba. Tour operators and other visitors can view the weather conditions from a CCTV camera that's linked to our website before they leave Sydney.

"I can also use the CCTV system to see how the weather was if I have been away. I just scroll back through the days using the Milestone software and can see the conditions at a glance. It's a great tool."

As well as operational management the system is also vital for people management.

"We have thousands of visitors a day on the site," Hammon says. "If anything occurs we have instantaneous viewing and recall and this allows us to look at any event and see issues developing and respond as early as possible."

In a litigious world the system has also allowed management to check attempts at insurance claims.

"We recently had a suggestion that an injury had been caused by some part of the site but when we called up the images it was clear the injury was unrelated to anything we had done and would have occurred to this elderly person anywhere they happened to be walking."

THE SCENIC WORLD SYSTEM

The networked surveillance system at Scenic World was installed by integrator Tunsuna, a company that has been installing IP video solutions for 12 years. Tunsuna started out installing the first Axis IP cameras and now installs a range of devices integrated with Milestone's robust security management software.

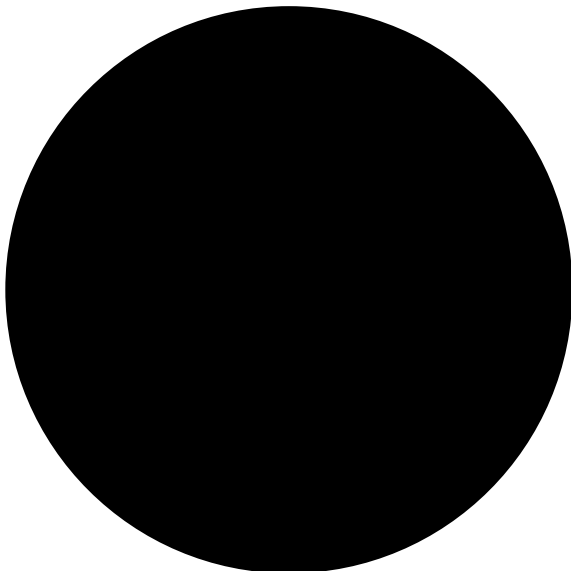
According to Tunsuna's Peter Cary, the company was asked to supply a CCTV system by the designers of the site's new facilities in 2003, a time when a significant upgrade at Scenic World saw construction of a new visitor's centre, admin building and other works.

Cary has bags of enthusiasm and he and Philip Hammon, who has a good understanding of the fundamentals of electronics, chaff each other relentlessly and hilariously about the challenges of the site and their mutual experiences with what each clearly sees as his own system.

"The installation of the networked system began in 2003 with the object being the construction of an open system with an open architecture," Cary says.

"It was a real advantage for us having so many years experience in IP video and one of the things

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Tunsuna's Peter Cary (l) with Scenic World's Philip Hammon

we learned in the early days was that you can't cut corners on quality with networked surveillance solutions.

"To ensure network uptime we use quality hardware including HP servers, as well as the best IP cameras and management software," Cary explains. "Phil can't afford the site to be down and I can't afford to be driving up to Katoomba once a week - it's that simple."

"In the past we have used what you might call economy IP cameras and software solutions and I would never do so again. The quality of the core system at Scenic World is evidenced by the fact it's all still operational."

The easiest way to understand this system is to start with the cameras and work your way inwards

to Hammon's dedicated workstation. Like every networked CCTV system, Scenic World's solution is agreeably modular and has significant potential for future expansion.

"When talking about the devices used with a system like this, you have to talk about the management system first and one of the beauties of the Milestone management software at Scenic World is that we can pick non-proprietary cameras that are perfectly suited for a given location," Cary says.

"Obviously, every requirement around a site is different. One of the great things about Milestone is that we can use Bosch, Mobotix, Axis, Sony, Panasonic - any open architecture IP camera that's available or released in the future that suits our needs.

"We currently have 22 cameras in the system - including Axis 210s and 211s, Canon PTZs and Mobotix M22s," Cary says. "The Canon is used for access over the web while we use Axis in the carpark and the restaurant and shop. We use Mobotix externally because Mobotix cameras don't need external housings and have fantastic images.

"All these cameras are IP and all work well. We have different cameras partly because we have bought the cameras at different times but also because each handles a particular application best.

"We use the Mobotix cameras in more challenging external environments. This is a cold and wet climate in winter and very hot in summer. In some of the locations the M22s are installed there's vibration and dust - things that would be a problem for another camera but the Mobotix M22s can handle it."



Cary says that as well as running cameras back to the network room on fibre, some arrive from nearer locations on Cat-5.

"We have our IP cameras running on a mixture of Cat-5 and fibre optic cable," he says. "Our outlying cameras arrive on the fibre link running down into the valley.

"There are 2 major hubs on the site that are linked with fibre optic cable - there's a hub in this admin building and a hub in the visitors centre with the recording equipment in a central location," Cary explains.

"The fibre comes up from the bottom of the site and goes into a swap-out box with a Cat-5/6 out which then goes onto the network. The cameras are not on a subnet - they're running on the data network. The network here is well and truly up to spec."

According to Cary, the system streams video at 16 frames per second and records at 6 frames per second, that's plenty for a system like this one.

"The bottom of the cable way is 500 metres from the top so fibre is the ideal solution for us. This fibre goes into the network in our visitors centre and gets onto the network via a switch. Access from the workstation in the admin building is over another fibre"

"We run the system on a dedicated workstation linked to a dedicated Milestone server," Cary says. "We have a separate Milestone server and there's disk attached storage with 7TB of storage attached to the system. It's a large amount of storage and we try to hold incidents as long as we can.

"Importantly, there's room for expansion - we'll get about 45 cameras on the current server and we can go to 64 cameras using this software before we go to enterprise - a shift that's achieved with a license upgrade."

Cary says access to the system is restricted to senior management at Scenic World and to technical support people at Tunsuna.

"This remote technical access is important with an IP based system - we try to install firmware patches that upgrade camera functionality and other hardware immediately."

According to Cary, another nice thing about Milestone is that the manufacturer is prepared to make changes and to enhance the software if they see there's a need for it.

"Milestone has made changes for our customers before and from the point of view of an integrator, this is very important. They will add facilities customers require. The system is simple as possible. I have Milestone on 80 sites and we have never had any trouble with it."

Cary says Tunsuna has been using the Milestone software for about 7 years and he says it works well, with all the features you could want, including multiple remote access and scalability.

"When you're installing cameras to Milestone you install the device, link it to the network then get into the software, it goes out and finds the camera and you then change the camera to the IP address you want it to be and name the camera view."

Because this is a mature site IP video solution it gives an insight into the big improvements in the technology in recent years and Cary says



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CASE STUDY



A compact Robotix megapixel camera beside one of Scenic World's original CCTV housings

each enhancement offers a better fit for challenging applications.

"Over the 4 or 5 years since we started putting IP cameras in up here things have changed dramatically – zoom lenses have improved for a start - our first PTZ had 25x zoom and the new one has a 36x zoom lens.

"Cameras are definitely becoming more capable – with our Robotix cameras we can now crop images prior to storage in order to reduce the recording footprint while ensuring we retain the image quality we need," Cary explains.

"Also night vision is getting much better. People look at IR cameras but I think passive flood lighting connected to sensors should be used more often."

A site like this one – 16 hectares of rugged bush – begs the question when it comes to a discussion about installation challenges. Cary says there were some issues during the original installation.

"It got complicated with OH&S issues in terms of installing the system during construction of the new facilities," Cary says. "All we could do was pull the cabling and then wait for construction to finish before installing the cameras.

"An IP CCTV system is very easy to install but a site like this has challenges. All in all we are very happy with the system – it has been very robust, given the number of lightning strikes in the area."

From an operational challenges point of view, Philip Hammon points out that there's jitter on the tower-mounted camera.

"When the cable is running there's vibration through this support tower that impacts on the image," he explains. "And there have been issues with wildlife here – we're in the bush and there's a lot of wildlife. We've had rodents chewing on the coax in the pits, and spiders invading the supposedly waterproof enclosures.

"But the only challenge we have not been able to get around is putting a camera onto one of our open trains – we would also like a waterproof, solid state monitor that's about 7 x 5 inches at an affordable price." ■■■