

Mercedes' Silver Arrows visitor experience lounge at its UK HQ at Brackley; (right, opposite) the trophies, obviously...



A winning AV formula at the heart of the sport

Clive Couldwell delved into the black art that is AV/IT at Mercedes-AMG Petronas Motorsport. He came out with more than he'd bargained for.

Technology's a wonderfully complex thing and it's changing all the time. Perhaps the most perfect illustration of this is in Formula One motor racing. If you look back over the last decade, we've moved away from naturally aspirated V8 engines, to highly advanced V6, 1.6 litre, turbo charged, hybrid power units that boast 35 per cent more fuel efficiency, yet deliver arguably more power than their predecessors.

This is one of the easier-to-see differences for those who follow such things. Perhaps one that is less obvious, even though you'd think it wouldn't be, is the digital transformation of the sport.

AV and data complexity

The challenge within F1 has always been making sense out of huge volumes of complex information. The use of this statistical data has rocketed over the last 10-15 years. F1 pros want to import

feeds to wherever they are as part of their videowall and control room systems. This is where AV and IT elements are really coming together to create tightly integrated environments.

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start visualising analytics and deep learning," says the Mercedes F1 team's IT operations manager, Chris Green who's responsible for the team's technology roadmaps and project execution. "We're using a combination of our visual analytics, AI machine learning, and simulation in the design, setup, operations, and strategic components that we work on."

The best way to describe this is to think about a triangle. On the base layer, you have data acquisition where you're trying to collect data from the car and build a pool of performance information. By categorising it, storing it, and knowing where to find it, you've got information at your fingertips. The final part, in terms of knowing how to use it – understanding, is where AI/learning combined with AV's role in simulation comes in to provide teams with competitive edge over the opposition.

"There is a huge amount of simula-

tion work that goes into developing our cars before we get out to a race weekend - five days a week, six hours a day we're using these tools to improve the baseline performance of the car," Green says. "Digital is underpinning everything, helping us pull astonishingly detailed data so we can look at it in real-time, visually."

Data as an asset

One of the team's senior engineers popped into Green's office at 6 o'clock one Friday evening asking for the race data for Barcelona in 2004 – turn three, run two on a particular date. "He thought he'd just seen something while we were testing that we'd learned about before – an interaction between the gearbox and the tyres. The combination of AV and analytics helped us get hold of it and assimilate it. This turned our data into a valuable asset rather than just sitting there as a cold archive," says Green.

Another episode at the recent Singapore GP focused on why an engine was losing power. The engineers were baffled. "By analysing the video footage we could see for 23,000th's of a second



Nothing at one time, but today's F1 pit garages are awash with AV kit

the electronically powered throttle was cutting out. That took a long, long time for us to go in and find out and the system was able to highlight the anomaly which we probably wouldn't have been able to spot otherwise," he recalls.

Customer experience

Of course as you'd expect, Mercedes – like many of the teams – has produced state-of-the-art customer presentation areas, such as its Silver Arrows lounge and auditorium at UK HQ in Brackley. But, over the last year the team has also been using AV to create experiences for its fans, guests and customers, like the virtual garage experience, an immersive event incorporating audio from BOSE and soundscapes visualised with Epson projectors – both company sponsors.

You move freely through a futuristic space, at the same time hearing audio in direct response to your movements.

The team wanted to provide visual

cues to emphasise the audio elements, and crucially, create the setting for the overall experience so decided to enclose the activity within a small space - essentially a projection cave - with four walls and the floor featuring a seamless abstract projection.

The Moverio experience also continues to be a regular feature. You're guided around the garage where the team sets up and maintains its racing cars, enjoying a talk – an augmented reality show - through Epson's OLED Moverio smart glasses which display what appears as large semi-transparent images floating against the surrounding background.

Through the smart glasses, the team can show information such as drivers' profiles and complex engine mechanisms using see-through images.

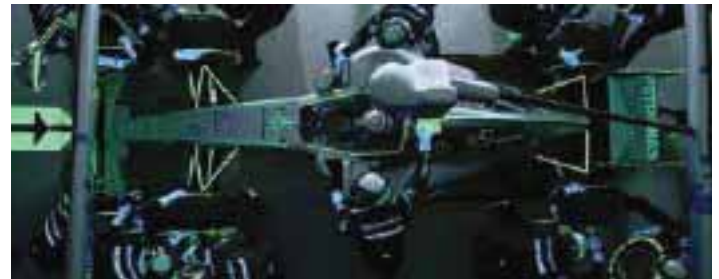
And again, at the Singapore GP to encourage Formula 1 fans to look at pit stops in an entirely new light Epson transformed the Mercedes-AMG Petronas race car from its normal state into a glow-in-the-dark masterpiece.

An Epson SureColor SC-S Series printer enabled the F1 design team to produce glow-in-the-dark versions of the car's branding.

The lights were then turned off and the crew completed the world's first ever glow-in-the-dark pit stop.

Complete with glowing overalls and equipment, the team conducted several rapid tyre changes.

The effect was enhanced by using Epson's EB-L25000U, 3LCD laser projector with 25,000 lumens plus 4K enhancement (dynamic and high-impact). ■



(And top): blow me down - if it isn't a glow-in-the-dark pit stop

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The Moverio garage tour uses augmented reality