Innovation: A real live Grand Prix in your living room

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Hammering down the straight in a Grand Prix racing game, you're keeping challengers at bay with some deft manoeuvres. But just as you take a perfect racing line into a bend, disaster: your flatmate plonks a steaming mug of coffee in front of you, denting your concentration; before you know it you've slipped back and the chances of a podium finish look slim.

It's a harsh lesson but that goes with the territory when you're competing against professionals. For while you've been sitting in your front room, your opposition have been battling it out in a live Formula 1 race.

Two European companies are racing to perfect real-time race gaming technologies that let you do this. Both aim to use live streams of GPS data collected from race cars to populate a detailed digital doppelgänger of a racetrack on a PC or games console.

The two firms – IOpener Media [1] of Aachen, Germany, and Real Time Race [2] of Daresbury, UK – share the same basic idea: to let people race against professional drivers while those drivers are actually racing.

Need for speed

To do this, the firms place a 500-gram box of electronics about the size of two packs of playing cards in real-world race cars. GPS receivers and accelerometers in the box stream a live readout of the vehicle's position and acceleration wirelessly to trackside receivers. "The inertial unit measures the *g*-forces on the cars so we can capture their true motion for the game," says Christophe Dujarric of IOpener Media.

The cars' positions are then injected onto a virtual track for relaying to the gamer over the internet. To build their model tracks, both firms scan the race circuit before the competition using the same tech Google does for its Street View service: a panoramic camera and a laser radar, or lidar, mounted on a conventional car. The camera captures the visuals and the lidar charts the circuit's three-dimensional architecture: how far the track edge, crash barriers and grandstands are from the track centre.

This is where the firm's offerings diverge. IOpener Media digitises the track and uses the cars' data streams to make computer-generated models mimic their live-race counterparts. Its system is currently in beta testing on the web, but Dujarric says the company ultimately wants software houses to make their Xbox, PlayStation or Wii racing games compatible with the patent-pending technology. So playing against real race drivers may become an option for users of top titles like *Gran*

Turismo.

Chris Leigh of Real Time Race has other ideas. "Formula 1 has looked into it and its focus groups said they would prefer real-time racing inside live TV pictures, not rendered graphics," he claims.

Pole position

So he's come up with a way to mimic the live TV look. Real Time Race's system plays back video from the track-scanning camera and then inserts photorealistic models of the real racing cars, in their correct GPS-fixed positions, onto it. Images of the gamer's vehicle are generated locally by the games console, which also controls where it is on the track. "We're patenting a way of steering left and right from a position where the camera that acquired the track data never was," Leigh says.

Last month Real Time Race tested its system on a NASCAR race [3] in the US and IOpener Media did likewise with the World Touring Car Championship [4] in Zolder, Belgium.

When the tech will be hitting our homes is unclear. Both firms are working on their business models, working out how they can best work with racetracks, sports governing bodies, software houses and sponsors to make the technology viable. "Let's put it this way," says Leigh. "If a group of customers went for it, we could have it ready in 12 weeks."

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