

# GEO- IMMERSION BRINGS MASHUPS TO LIFE

Geo-immersion, with its immense capability to reduce the time between the occurrence and reporting of an event on map to zero in an automated manner, promises a new and innovative use for maps and will create demand for live data



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Each of the 500,000 mashups on the Web depicts a slice of the world – at a single point in time. The information they provide is no more or less current than what had been provided by the paper maps they so quickly displaced. No matter how much care went into its creation, after it has been published, the map begins a slow but inexorable decline into irrelevancy.

Geo-immersion is an evolutionary step forward that connects the mashup to a real-time stream of data, fed from a network of sensors. It provides an immersive, animated experience that reflects the real world in real-time. It's virtual reality, but on a map.

The potential of geo-immersion is as vast as the network of sensors that feed it. Consumers have so far embraced 500 million smartphones that digitise their experiences. You only have to observe a group of people for a few seconds to realise that their smartphones are digitising their actions, experiences and persona – every time they move, submit a tweet, check into foursquare, take a photo etc.

Smartphones have become “sensors” that capture social behaviour, and constitute a growing source of information for geo-immersion. Buses and trains also have sensors that track their movement, and other things having a known location and an Internet connection – like surveillance cameras, parking meters – make good food for geo-immersion, too. Crowd-sourced websites form another type of “sensor,” which capture user submissions, updates and deletions.

The idea behind geo-immersion is to reduce – to zero – the time from when an event occurs to when it is reported on a map.

## Technical challenges

A static mashup relies on a highly-scalable content distribution network (CDN) for data. CDNs are easy to configure and deploy and are cheap to operate. A geo-immersion map relies on a continuous stream of dynamic data, fed from a network of sensors. It resembles YouTube, except that the content constantly changes and never repeats, and thus cannot be sourced from a CDN. Instead, a geo-immersion map must be served from a custom server framework built from cloud components such as Amazon's Elastic Compute Cloud (EC2), Auto Scaling, Cloud Watch and Elastic Load Balancing.

We experienced the complexity of piecing these components together last year, when we built and deployed a geo-immersion map of 40 vehicles that raced around the two mile oval at the Michigan International Speedway, in competition for the US\$ 10-million Progressive Automotive X PRIZE. After much design, tuning and testing we had a solution that provided the necessary scalability to bring a live race experience to thousands of race fans who tuned into their maps, from around the world.

Those of us at the speedway could watch a vehicle turn the far corner on the map, and then look up from our screen to watch it race by in front of us on the track. The experience was magical, but required much work to build and deploy – far more than had we simply deployed static telemetry data on a CDN.

Geo-immersion promises a new and innovative use for maps, and will create demand for live data, perhaps provided by the billion smartphone “sensors” that will soon be distributed around the world. 