



Albert Puértolas | Online Technical Director

# SUPERCARS, SPIN, AND SPLIT-SECOND TIMING

Albert Puértolas is the Online Technical Director of Gameloft's Barcelona studio. Before joining Gameloft in 2009, the Spanish software engineer spent time as a freelance programmer at Akaoni Studio and as a junior programmer at Gammick Studios.

Created to be 'the ultimate console racing experience on mobile', Asphalt 9: Legends is arcade racing at its most dramatic. Intuitive handling, spectacular locations, and a roster of supercars from the likes of Ferrari, Porsche and Lamborghini, have seen Asphalt 9 amass a fan-base of millions. Drivers need all their wits and split-second timing to dodge tornados in Midwest America, or spin away from landslides in the Himalayas.

Gameloft is responsible for an incredibly diverse range of games, from Gangstar to Disney Magic Kingdoms. One of the studio's most successful franchises is the 15-year-old Asphalt. The latest version of the game proved to be Gameloft's most challenging project to date, and could only be achieved by moving to the AWS cloud.





**“I thought it was magic. Out of this world”**

The first time I saw a video game, it was a case of ‘mind blown’. I thought it was magic—out of this world. As a young kid, I liked playing games and inventing stuff, and although I hadn’t yet learned how to program, I’d have fun drawing games and writing down how they might work. The challenge of figuring out how to do things I wanted to do, was super-fun. I still prefer more contextualized problems, where it’s a case of: ‘I want to do this, so how am I going to do it?’ rather than: ‘Hey, here’s a puzzle, solve it’.

I always knew I wanted to work with games. My first job was here in Barcelona at a really small games development startup, which doesn’t exist anymore. There were only six of us, and I learned so much in so little time, simply because we had to do a bit of everything. We actually managed to publish a game, which for me was like being on cloud nine. I still get that same feeling today.





### DID YOU KNOW ...

Gameloft has one of the most diverse catalogs of mobile games in the world—operating its own established franchises, such as Asphalt, Dragon Mania Legends, Modern Combat, and Dungeon Hunter. It also partners with major rights holders, including Disney, LEGO, Universal, Illumination Entertainment, Hasbro, Fox Digital Entertainment, Mattel, Lamborghini, and Ferrari.

### “To justify a sequel, a game has to really stand out”

With Asphalt 9: Legends, we had a good idea of what we wanted to achieve right from the start. The game was already a few years old, so we needed to get it up to speed with the latest in technology and car specs. It was a case of: “This is a game which is already working, so what else can we do to justify a sequel? What will make it stand out, apart from just looking better?” During prototyping, players told us they wanted more control over the cars, and to be able to really feel the difference between a car that accelerates rapidly and one that has better handling. We put a lot of time into trying to make those differences more palpable. We even played around with road surfaces.

### “Why not let the car drive itself?”

TouchDrive is one of the main differentiating features between Asphalt 8 and Asphalt 9, and we’re super-happy about how it worked out. There are moments when you want to take every single curve in the best possible way, but other times you just need to complete a race to move onto the next level. Driving normally takes all your concentration, when you might just want to chill and go for a ride. We thought: ‘Why not let the car drive more or less on its own?’ You’re still in charge though, so when there’s a branch in the track ahead of you, you can choose to go left onto the longer-but-safer path, or take a right and face a shorter-but-more-treacherous route.

### “We were nervous how fans would react”

All through the 15 years of the Asphalt franchise, the player has always driven the car. The moment we started discussing assisted-drive, well, you can imagine the debate that triggered! Even though TouchDrive doesn’t replace the original driving stance, and players can still choose whether to use it, we were nervous. We didn’t know how long-term fans would view the change. We ran focus groups, brought in people to test the different driving mechanisms, and gathered feedback, but we didn’t truly know what reaction we’d get on launch day. Some gamers have been critical, but overall the move has been a success, with 85 percent of players now using TouchDrive for at least some of their races.

## “It’s all about intuition and gut feeling”

You come up with so many ideas as a team, but few of those are strong enough to convince everyone. You know you’re onto something when there’s a clear consensus that a new feature is worth investing a lot of time and money in. A lot of that is down to intuition and gut feeling. Normally in the development process, if something doesn’t show a palpable improvement after the second or third alteration, or isn’t contributing towards a key goal, we’ll let it go.

## “You can’t please everyone”

We made a lot of changes to Asphalt 9 based on player feedback. Players ask for many different things though, so it’s not always easy to arrive at a true consensus of what the community as a whole wants. You can’t please everyone, but regular community checks allow us to see what most people like or dislike about the game. If there are low-hanging fruits there, we log and action them when we can. Sometimes, actioning a community request involves a considerable amount of work, but we always try to incorporate feedback if we can.

## “The biggest challenge was our own ambition”

Some of the things we set out to do for this latest game were incredibly hard. We knew in advance what we were getting into, but it was still massive—by far the biggest and most complicated project we’ve ever done. There were points where we knew we were making our own lives a lot harder, but we really, really wanted to go that extra mile to make this new game so much better than the last. That commitment is what ended up making Asphalt 9 what it is today.

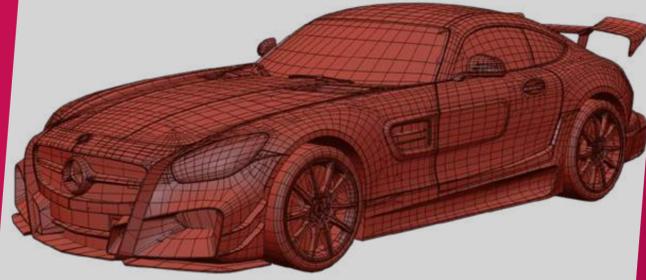


### FROM CONCEPT TO REALITY

Concept



3D model



Final render



## “We built the game engine from scratch”

We realized early on that if we were going to do a sequel, we couldn't do it with the in-house tech stacks we had. The game engine for Asphalt 9 was built from scratch, and it was the first time we'd used physically-based rendering with HDR. It changed how we produced backgrounds and all the other game assets, as it allowed us to effectively represent how light refracts and reflects on different surfaces in the game, resulting in much more natural and realistic graphics.

The new physics engine also allowed us to play around with the road surface that you're driving on. For example, you can drive across the sidewalk for a shorter route, but there's less grip so it's riskier, and you're more likely to crash. It means there's a bigger tactical element for the player.

## “We are constantly coming up against new challenges”

On the development side, there are so many unknowns in the art of putting together a game. It's almost impossible to predict what challenges you're going to come up against, because we're not always making the same cookie-cutter games. If we always worked on tic-tac-toe, dominoes or poker games, maybe that issue would be reduced, but today we could be working on a racing game and tomorrow a platform game, so we're constantly coming up against all sorts of different challenges we haven't faced before.

## “Doing it ourselves would've been prohibitively expensive”

With Asphalt 9, we wanted to be fully online, so we knew we needed a cloud service. We thought of AWS first, because it's the longest running cloud provider, well-documented, and used by a lot of

companies. As soon as we started to play around with it and saw what it could do, we realized it was the full package, and decided to run our servers on AWS' [Elastic Compute Cloud \(Amazon EC2\)](#). It wasn't that we couldn't do it ourselves, it was more that it would have been prohibitively expensive. We typically process thousands of requests a minute—dozens of millions a day. On launch, we had five to 10-times more, and if we'd tried to handle that within the company, we'd have been provisioning for way more than we'd need later.

## “We used hundreds of thousands of bots”

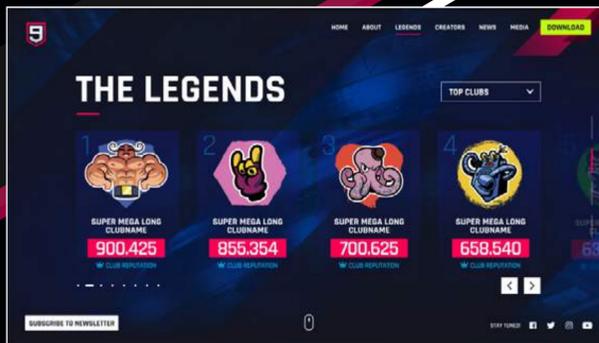
We also used [Amazon Elastic Container Service \(Amazon ECS\)](#), before and during the first weeks of launch. We set up bot tests, where we had AI running the game and mimicking human players, and then tried to stress the whole infrastructure, to check everything was scaling in and out correctly, and there were no major issues.

We wanted to generate a volume of traffic similar to launch, so we ran hundreds of thousands of bots on AWS. We use [Amazon Simple Storage Service \(Amazon S3\)](#) for backing-up server logs, so we don't need to worry about how much we back-up, which is fantastic.

## “Despite the huge surge of users, the launch went without a hitch”

Asphalt 9 was the first time the Barcelona studio had done a cloud launch. After doing all the work for the game, stress levels were massive as everyone was thinking of all the things that could still go wrong. If there wasn't enough provision, we could have ended up with a nightmare scenario where users couldn't launch the game. Seeing the launch go without any issues, despite the huge surge of users that came in, was a huge relief.





## “Cars you can only dream about racing”

Part of the reason behind Asphalt’s success is it’s a very long-running franchise. If you look at the versions from several years ago, they don’t look anything like they do today. Clearly, players from back then love the way the game is now, even though it looks and plays completely differently. There’s still that feeling it’s the Asphalt they played all those years ago, so they’re more likely to give it a shot again now. Open the game today and you find this monster with realistic-looking graphics, high-pace, and sports car brands that racing fans (including me) go gaga about. What’s not to like?

## “AR and VR are getting there slowly”

AR and VR have a lot of possibilities, and there are some great VR games out there, but for the player, there’s the barrier of having to purchase a big, heavy, expensive headset which is only for gaming, plus accessories, and needing to be cabled into a terminal. The technology is advancing rapidly, but the interface isn’t ready.

The day we can do that with something like my sunglasses, it’ll be a completely different story. There are a lot of non-gaming applications for all these technologies, and at some point, they’ll converge to the point where interfaces for VR and AR have multi-use, so you’ll be able to use them to play games, call your parents, and browse the internet. The problem is, it’s not a mainstream market right now. It’s getting there, but slowly.

## “Playing on your mobile will look like you’re on a \$4,000 PC”

When we get 5G across the globe consistently, with such huge bandwidth, and as long as the quality of the connection is good, we’ll really feel the advance in streaming solutions. There are games where it’ll be more noticeable, like a fighting game where there are super-fast reflex reactions. You’ll be able to play amazing-looking games that will always look and feel the same, no matter where you’re playing them from. You’ll be able to play from your mobile phone, and they’ll look as if you’re playing on a \$4,000 PC. It’s also going to be great for cross-platforming because you won’t have to worry about the differences between Android, iOS, Switch, or PC—the platform platform won’t matter, because the game will look the same everywhere.



**“We’re always looking for a fresh twist to keep players entertained”**

We take quality of service very seriously and try to stay on top of how players are finding a game. We’re always thinking ahead: ‘Players don’t like this aspect as much; let’s see if we can understand exactly why. What’s the next twist that will make this bit better?’ You need new things to keep players entertained. It’s not just a matter of bringing out new cars or environments. Obviously, those are a huge part of a new game, but they’re the easy bits.

The hardest thing is coming up with new special events in the game. These tend to be bigger, have slightly different rules, and enable gamers to play differently. Spoiler alert: There’s another special event coming up, which will be considerably different to anything else, but I can’t say any more!

**S**  
**STUDIO**  
STATS & FACTS



	<b>Founded:</b> 1999
	<b>Barcelona Team Size:</b> 150
	<b>AWS Services include:</b> <a href="#">Amazon EC2</a> and <a href="#">Amazon ECS</a>
	<b>Biggest hit game:</b> Minion Rush, 900m+
	<b>Key awards:</b> PG Legends Award for Best Publisher 2006-2016'; Apple's 2019 Design Award; Pocket Gamer's 2019 Best Audio/Visual Accomplishment Award; Webby's 2019 Best Sports Game Award
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**G**  
**GAME**  
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	<b>Genre:</b> Racing
	<b>Platforms:</b> iPhone, iPad, Windows 10, Android and Nintendo Switch
	<b>Units sold:</b> +80m downloads
	<b>Launch date:</b> July 2018
	<b>Metacritic score:</b> 74
	<b>Fast fact:</b> On worldwide release, Asphalt 9 reached four million cross-platform downloads in less than a week.

**T**  
**TEAM**  
STATS & FACTS



	<b>Executive Producer:</b> Sylvain Billaud
	<b>Producer:</b> Ignacio Marín, Aska Suzuki
	<b>Lead Software Engineer:</b> Arnau Font Riera
	<b>Lead Game Designer:</b> Marc García
	<b>Principal Game Designer:</b> Antoine Cabrol
	<b>Art Leads:</b> Dmitri Mangiagalli, Nacho Yagüe, Jimmy Lorente
	<b>Composer:</b> Vincent Labelle, Martin Courcy, Nicolas Dubé