

Gaming Technology and Trends

I am the lead writer for GamesBeat at VentureBeat. I've been there six years at the tech news site, and helped start the game coverage. We've got 16 full-time writers and editors, including four dedicated to games. I've been a journalist for 25 years, a tech writer for 22 years, and a game writer for 17 years. But I'm an English major, not an engineer. So you'll hear a lot of thoughts on strategy and business, and not as much about technical things.

What do engineers want to know about video game consoles?

I would like to argue that your hardware strategy matters. Some people might say that hardware is a commodity. Or that these new consoles are really just PCs under the hood. I don't know if I would reduce the complexity of this business to such simple statements.

IHS, a market researcher that bought iSuppli, says the Xbox One costs \$471 to make. It sells for \$500. The PlayStation 4 costs \$381 to make. It sells for \$400.

About \$75 of Microsoft's extra cost is for the Kinect motion-sensing camera. Sony isn't including the PlayStation Camera in its box. You can buy it for extra at \$60.

That means Sony has a cost advantage for the duration of the next console war. Microsoft will sell fewer machines, unless it comes up with better games that exploit Kinect, or it spends more money on marketing.

It can afford to do that, but that's what you would call the brute force marketing solution to winning. Sony, on the other hand, is selling off its buildings right now and figuring out how to cut its staff. It can't afford to get into a ground war with Microsoft on marketing spending. It also learned the lesson in the PlayStation 3 launch that \$600 is a bad price for a console.

Microsoft is clearly catering to the whole household, in an attempt to expand the overall market for entertainment in the home. Sony is focused on winning the loyalty of gamers. In the short run, this may be the smart strategy. In the long run, Microsoft may have the winning hand. But it has to be competitive in the short run or there will be no long run.

Who has the better strategy? I would classify both strategies as cautious. Neither company is taking the riskier pricing model of razors and razor blades. That was where you lost money on the razors and made money on the blades. Consoles were razors, and blades were games.

Back in the dawn of the original Xbox, Microsoft sold its box for \$300 and it cost \$425 to make at the outset. The company had to sell a lot of games to make up for that. It didn't. And during the four-year life of the Xbox, Microsoft lost several billion dollars.

Microsoft went with off-the-shelf PC parts that had already been cost reduced and couldn't be cost reduced much more. It had, for instance, a single platter Seagate hard drive. That was pretty hard to cost reduce.

It also had a processor made by Intel and a graphics chip made by Nvidia. Sony made both the processor and the graphics chip for the PlayStation and the PlayStation 2. As a result, thanks to die shrinks and Moore's Law, it was able to combine those chips into a single chip by the end of the console generation. Ken Kutaragi once said that the combination of the chips mean that Sony was able to reduce the size of its processor-graphics combo in the PlayStation generation to 13 percent of the original combined die sizes of both chips. You could roughly equate that to a vast reduction in costs, from perhaps \$100 to \$13 over the life of the console generation.

That was a telling fact, since Sony was able consistently make money on its hardware in the PlayStation and PlayStation 2 generations. Nintendo was in the same position. But Microsoft was only able to survive the Xbox generation by investing billions of dollars into its hardware subsidies. And you can imagine what Intel and Nvidia said when Microsoft wanted them to combine their separate chips into a single chip.

It's no surprise that this generation started out with APUs, with both Sony and Microsoft opting for a combo processor-graphics chip from the outset. AMD is supplying the core technology in both cases, but Microsoft's chip costs \$110, and Sony's costs \$100.

The surprising thing about that is that the PlayStation 4 has better overall performance than an Xbox One, which costs more to make. That's because Sony also opted for a different memory system. Sony ordered up something simple, a unified memory system with a simpler data flow, using GDDR5 graphics memory instead of DDR. Microsoft chose to have a memory cache in addition to its DDR memory.

But Mark Cerny, system architect for the PlayStation 4, explained that Sony chose more expensive memory so that game designers would have a simpler time making games for the PS 4. He didn't want developers to be responsible for managing a small memory cache.

This is a radical departure from the beast that Ken Kutaragi designed with the PlayStation 3. That machine had a Cell processor with eight cores at a time when developers didn't know how to use them all. It took up to a year for developers to create working prototypes for the PS 3. That made the games horribly expensive and run off schedule. Developers hated it.

With the PC architecture in the PS 4 and the Xbox One, it's a lot easier to design games. Developers already know how to make prototypes if they know how to make PC games. The x86 architecture is familiar. So it's no surprise to see that both systems are launching with 22 games, which is probably a record for a console launch.

The question is whether these games go far enough. They're HD games, with 1080p resolution. That's the same as the past generation. You can see better special effects, physics, and lighting and shadows. But it may not deliver enough of a wow for many gamers.

Now if you ask me what system looks better to me? I will say that I can't tell the difference. The gamer PC is the best system out there today. But for all of Sony's talk, I can't tell the difference in game quality on either system. And the best-looking game in sight is Titanfall, an exclusive

for the Xbox One.

Nintendo, meanwhile, is dead in the water with the Wii U. It's a two-horse race now, with lots of others in the noise. Both Microsoft and Sony sold a million units in a day. All of the Android-based micro consoles can't come close to that, even if you give them away for free.

The only popular items that can touch Microsoft and Sony -- selling a million units in a day -- and really make their numbers look bad, are brand new iPhones and tablets from Apple. Mobile devices remain a very real threat to the consoles. The talent is migrating to mobile, and that's not good news for the consoles. Earlier this year, 70 percent of the funding being raised by gaming startups was being raised by mobile game companies. That means that a huge part of the developer base is migrating to mobile. It's also not that hard to find console game studios and publishers that are shutting down.

Developers are like the canaries in a coal mine. When they die off, there's something wrong with the ecosystem. Console game makers are still around, but they're in blockbuster mode, a lot like the movie studios. The art houses are moving to mobile platforms, where they can self publish. Is this a crisis? Not really, because this happens during every console transition. But try getting funding to start a new console game studio these days. It won't happen.

You can see some of the developer problem in companies like Natural Motion. They were once a console technology company and game maker that created ground-breaking physics technology for realistic movement in games.

They spent five years on a game that was a dud on the consoles. They switched to mobile. They have launched free-to-play titles on mobile, like CSR Racing, that generate \$12 million in revenue a month from virtual goods. They spent 10 years creating a realistic AI character, driven by realistic physics and cool graphics. And they launched it on the iPhone and iPad, because they saw that console-like technology had finally come to mobile.

Now it certainly seems like the mobile game business is far away from the console business. Grand Theft Auto V made \$1 billion in revenue in three days, making back the money for its five-year, \$260 million development project in just eight hours. But mobile game makers are exploiting a much larger installed base. We'll have billion-dollar games from Supercell and GungHo Entertainment at the rate those companies are generating money from in-game virtual goods purchases. That is why Supercell, with 130 employees, is valued at \$3 billion, more than Zynga, with 2,200 employees, and more than twice as much as Take-Two Interactive, owner of Rockstar Games, maker of Grand Theft Auto V.

Apple is doing new spins on its mobile processors and its latest chip can process data in 64 bit chunks. In a few years, does anyone believe that the consoles will still have an advantage?

This might force console makers to rethink their strategies. They waited seven years to refresh their consoles. They made a lot of money in the sixth and seventh years. But they allowed Apple to emerge. Now what would happen if the combined forces of Apple, Google, and Amazon really tried hard to bring free-to-play games of the highest quality to micro consoles for the TV?

Or maybe just made TVs smart enough to beat the consoles?

These are some facts that I have collected and tossed out to you for you to absorb. But I hope I have conveyed to you that the console wars are hardware wars, and that hardware matters.

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