

EXHIBIT YY

CARMACK THE MAGNIFICENT

April 2012

IT WAS JUST SUPPOSED TO BE A MARKETING GIMMICK.

Six months earlier, in October 2011, id Software—the Dallas-based game developer best known for pioneering the first-person shooter genre—released a new game called *Rage*.

“A visual marvel,” declared IGN, in their review of the game.¹ “A breakout achievement,” hailed VentureBeat.² And, quite succinctly, “Carmack!” cheered the *New York Times*, referring to id’s legendary technical director, John Carmack.³

Instead of taking a victory lap, Carmack—a thin, blond-haired forty-one-year-old coder whose work (and speech) often made him seem part machine—proceeded with his typical postlaunch ritual. “A little R&D period,” he liked to call it. A little break from game development to think more broadly about the future.

Typically, these little R&D periods didn’t lead to larger endeavors, but occasionally, there would be a venture to pursue. Such was the case in 2000, when after finishing *Quake III: Arena*, Carmack decided he wanted to learn about rocketry and soon after founded a company called Armadillo Aerospace (whose goal was to build a suborbital spacecraft capable of space tourism). Regardless of outcome, these were periods

reason. And while there may not have been a specific inciting incident, an almost equally accurate answer could have been “it was only a matter of time.” Because in many ways, virtual reality was the unspoken end point of where his engineering efforts had always been heading.

AS A BOY—YEARS BEFORE HE'D PLAY HIS FIRST COMPUTER GAME—JOHN CARMACK got his gaming fix with tabletop role-playing games like *Dungeons & Dragons*.⁴ Though what he enjoyed even more than playing these games was overseeing them in the role of Dungeon Master. That enabled him—either from the rulebook or his imagination—to speak adventures into existence; and then when he grew bored with the loose restrictions of those rulebooks, Carmack moved to charting his own invented journeys on sheets of graph paper. Between that passion for world-building, and a penchant for fantasy or science fiction novels, it was clear from early on that Carmack preferred to spend his time inventing complex worlds or inhabiting those which had been invented by others. So naturally, he was drawn to the godly power and as-you-wish obedience of programming on computers.

Of all the things to program, Carmack's favorite soon became graphics. He loved how something as simple as binary code—just a mishmash of 1's and 0's—led to the creation of colors, images, and actions on a screen. But life behind the keyboard can be lonely. Like Palmer Luckey, Carmack found solace and purpose-driven friendship online, spending his teenage years hanging out on dial-up-accessible bulletin board systems—BBSs—where visitors could post notices, trade messages, and swap software. This exposed him to an incredible underworld of computer games; and eventually, while he was still in high school, Carmack set out to make a game of his own.

That game (*Shadowforge*) and his next (*Wraith: The Devil's Demise*) were both distributed by a small publisher, Nite Owl Productions. Neither game sold many copies, but just the fact that they sold any—that Carmack had created something good enough for others to spend their time playing—that was pretty damn

selling games were being made exclusively for consoles. There was a good reason for this: with underpowered graphics, computer games just couldn't match the speed and splendor of those made for consoles. Take, for example, a side-scrolling console game like *Super Mario Bros.* When players decide to run Mario (or Luigi) across the screen, the "camera" is able to keep up, keeping our hero in the frame and doing so in a smooth and seamless manner. With computer games, however, this was not the case. If a character moved beyond the frame, this would lead him to an entirely new screen. That's just how it was, an understandable by-product of underpowered graphics, and this remained the norm until John Carmack came up with a technique called "adaptive tile refresh" that made it possible for personal computers—PCs—to perform smooth and seamless Mario-like scrolling. In fact, to prove *just* how Mario-like their games could be, the founders of id Software made a demo called *Dangerous Dave in Copyright Infringement*, which near perfectly re-created the first level of *Super Mario Bros. 3* (save for swapping out Mario with a spritely dude named Dave).

This breakthrough technique, adaptive tile refresh, became the centerpiece of id's first game: *Commander Keen*. Though that game sold pretty well, it still only sold pretty well "for a computer game." That was the qualifier that was always used back then; because compared to hit console games (like *Super Mario Bros*, which sold tens of millions of copies), or even just mildly successful console games (like *Hogan's Alley*, which sold over a million copies), the best-selling computer games (even those part of popular franchises like *Ultima* or *Zork*) rarely managed to crack a hundred thousand copies. So that qualifier existed—"for a computer game"—but it wouldn't last for much longer. Because after *Commander Keen*, id was able to change the perception of PC gaming with a decade full of megahits: like *Wolfenstein 3-D* (which sold over two hundred thousand copies), *Quake* (which sold over one million

Games like *Wolfenstein 3-D*, *Quake*, and *Doom* made Carmack a rock star, and techniques like adaptive tile refresh, surface caching, and Carmack's reverse made him a legend within the gaming community. But there was also something else about him—something ideological in nature—that elevated Carmack from mere living legend to Gandalfian hero: a belief that openness, open sourcing, and technological transparency were critical to innovation. In a now-famous blog post entitled "Parasites," Carmack likened software patents to "mugging someone," explaining that "in the majority of cases in software, patents effect independent invention."⁶

These were not just empty words. Carmack lived by this credo. That's why he always publicly shared the source code for his games (after they had been released); that's why he regularly provided elaborate advice to hardware vendors (like Sony, Microsoft, and Nvidia); and that's why he readily divulged experimental findings and in-progress theories when delivering keynote speeches (particularly at QuakeCon, an annual celebration of id Software's games).

In fact, Carmack believed so greatly in the importance of this type of behavior—sharing, advising, divulging—that when he sold his company to ZeniMax Media in 2009 (and then signed a five-year-contract to work for his acquirer), he had special provisions written into that contract so that he could continue. That hadn't been easy to get in there. But the reason they acquiesced for the man fans called "Carmack the Magnificent" was because, over the course of twenty-one years, id Software had proven time and time again that Carmack's open and transparent approach worked. It had turned id's three iconic games—*Wolfenstein*, *Doom*, and *Quake*—into bona fide blockbuster franchises. And though—in October 2011—initial sales of *Rage* turned out to be less than ZeniMax had anticipated, there was still hope that it would lead to another world-class IP.

Right after the release, however, Carmack wasn't interested in thinking about sequels or spin-offs just yet. First, he wanted to en-

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