No Matter Which VR Headset You Buy, This Company Wins

Unity makes software tools used by some 4 million developers to build video games. Virtual reality could turn it into a $1.5 billion business.March 31, 2016

Photographer: David Paul Morris/Bloomberg

Sylvio Drouin, an energetic Canadian computer programmer, runs Unity Labs.

When visitors to the Leviathan Project strap on a virtual reality headset, they find themselves inside a science lab, suspended from the belly of an enormous flying whale. Their task is to build a synthetic jellyfish. Standing by to help are a virtual scientist, rendered within the game, and a flesh-and-blood aide in the real world, offering clues and making sure no one trips over the cords. Outside the lab's windows, the whale's gargantuan fins flap along, propelling the odd vessel through the sky.

Like a lot of VR creations, the Leviathan Project is a hybrid of a narrative film and a video game. People can manipulate objects, touch things, and go where they please, but they don't assume the identity of a character who is completing a series of challenges. Its creators refer to it as an "experience." One of them is Alex McDowell, the production designer for such movies as *Fight Club, Minority Report,* and *Lawnmower Man*. McDowell and his colleagues used video-game creation technology made by a

San Francisco company called Unity Technologies.

Coming from a career in film, McDowell was a quick convert. “I felt completely liberated when I started to understand the tools that game designers are working with,” he says. “As soon as I started working inside of Unity, I shifted my notion of what it means to be a designer.”

Source: The Leviathan Project

While Unity has thrived in relative obscurity for the past 15 years, it’s widely celebrated among people who make video games, especially independent developers. About 30 percent of the top 1,000 grossing mobile games are made using Unity, according to the company. If virtual reality takes off as Silicon Valley and Hollywood expect it to, the startup will be introducing itself to a much wider group of potential customers.

Unity is getting ready for the spotlight. It’s been conservative in the past about taking outside investment, at least by tech startup standards. It has raised only $17 million, even as it has grown into an 800-person company with operations in about two-dozen countries. But Unity is currently in talks with investors for a round of funding that could value the company at $1.5 billion, say people familiar with the matter. The round is expected to close within weeks.

Unity’s main product is a type of software known as a game engine. It’s possible to make video games by writing computer code from scratch, but most people use game engines instead. This software has many of the capabilities developers need for their games and is simple enough for a designer to work in, too. Instead of a developer needing to write code that establishes the laws of physics within each game, he can just turn on gravity in his engine of choice—then turn it down a bit for games set on the moon. When making Leviathan, McDowell marveled that the shadows over the lab cast by the whale’s fins automatically showed up in all the right places. Engines also handle the grunt work of making games compatible with the PlayStation or Apple’s App Store.

Without an engine, developers would spend a lot of time replicating tools that already exist. It’d be like asking film directors to construct their own cameras. Unity gives away a free version of its engine and charges studios for professional tools that start at $75 a month. It makes its money from these fees and from splitting advertising that it helps place in games. Unity also makes custom versions of the software for people who run specialized operations, such as gambling sites or governments.

Increasingly, its employees are turning their attention toward tweaking the engine to meet the needs of developers working in virtual reality. Facebook’s Oculus Rift, the most anticipated headset, began showing up in people’s homes this week. Sixteen of the initial 30 games available for the device at launch were built with Unity. The technology is also popular among developers making games for competing virtual reality headsets made by HTC and Sony and will be the primary way to make apps for Microsoft’s augmented reality headset, HoloLens, which began shipping to developers on Wednesday.

Unity's engine is even more dominant on the low-cost devices that allow people to strap their smartphones to their faces for a lower-tech version of VR. More than 90 percent of the games made for Gear VR, a smartphone-based headset that is a collaboration between Oculus and Samsung Electronics, were built on Unity, according to Oculus co-founder Palmer Luckey.

John Riccitiello, Unity's chief executive officer, says virtual reality will gradually expand the company's footprint beyond gaming. VR is an obvious medium for experiences like Leviathan but will also have utility in business applications, such as three-dimensional modeling for carmakers or even data visualization for financial analysts. Riccitiello argues that, in a sense, this will end up turning all kinds of people into game developers. "You need Unity technology, or technology very similar to Unity, to create anything in VR. So for us, it represents a really big opportunity," he says. "Virtually every company in the world is going to be in the VR business."

Photographer: David Paul Morris/Bloomberg

The first version of Unity's engine was released in 2005, a time when the barriers to entry for potential game makers were far higher than they are today. Developers say it was easier to use than competing engines for people with weaker backgrounds in coding. It was simple to use the engine to make games that would play on phones, consoles, or PCs. Also, it was cheap.

Unity's first users were people building games for Mac computers, but the engine really took off when mobile gaming became a phenomenon after the launch of the iPhone in 2007. About 4 million developers had registered with Unity as of 2015, roughly a fourfold increase from two years earlier. Unity executives say they have more developers using their software than all the publicly traded video game companies on earth have employees.

In 2009, Atari Chief Executive David Gardner thought his company should buy Unity. He believed it could help Atari build better games, but the company couldn't come up with enough capital to fund a deal. Instead, Gardner pulled together some of his own money and became Unity's first outside investor. "Unity has definitely been the transformational tool," says Gardner, now a general partner at London Venture Partners.

Unity has remained a tempting acquisition target, because big companies see game engines as a way to cement relationships with developers who are loathe to switch once they've invested the time to use one. Several years after Atari tried to buy Unity, Amazon.com considered doing the same thing, according to a former Amazon employee, who asked not to be identified because the discussions were private. The deal never happened, and Amazon recently licensed another gaming engine, Cryengine, and built a version that integrates with Amazon Web Services and Twitch, the live-streaming service it bought in 2014 for $970 million.

Unity's main competitor is the Unreal Engine, made by Epic Games. In 2012, Chinese Internet giant Tencent bought a 48 percent stake in Epic for $330 million. While Unity has been favored by

independent developers, Unreal is the conventional choice for high-end console game companies focused on making huge games with hyper-realistic graphics. Both have their partisans within the universe of game developers.

Unity has been looking to lock in its relationships by branching into other services. Riccitiello, the former CEO of Electronic Arts and an early Oculus investor and adviser, joined Unity's board in 2013. Soon after, Unity bought an advertising network and an analytics company to help developers make more money from their games. In October 2014, Riccitiello took over as CEO, replacing David Helgason, one of the company's three founders. (Helgason remains on the board.)

Riccitiello says the company's end goal is to provide every service a game developer needs to make a living. "The majority of the game industry is unprofitable," he says. "We want to make the world's best creation tools, but if you go bankrupt in the process, it didn't help you in all the ways you needed to be helped."

More than 26,000 badge-donning attendees came to San Francisco this month for the Game Developers Conference, where they ran between presentations about progressive light mapping, demos of new games, and boozy meetings in hotel bars. At other trade shows, the big crowds gather to gawk at curvy concept cars or the world's largest televisions. At GDC, several hundred developers filled an auditorium first thing one morning to watch Unity employees build games.

About an hour and a half into Unity's demonstration, Timoni West took the stage. West, a dark-haired woman who doesn't lack for tattoos or necklaces, clutched a controller in each hand and put a virtual reality headset over her face. "See you guys after this," she said to the crowd.

One awkward aspect of virtual reality is putting a box over your head that blocks out all your senses in a room where other people can watch you. West seemed unfazed. Onstage, she moved her head and hands around in seemingly random patterns. The audience got a sense of what she was doing by watching a huge screen behind her. In the virtual world, West held a palette in one hand, covered with a series of icons. She pressed a button and created ground to stand on. West selected the icon of a tree, pointed to a spot near her, and a tree popped up. She added a few more and some buildings. She looked into the sky above her and dropped in a dragon. "It's like playing with the best dollhouse in the world," she enthused. "This is awesome!"

West is a designer at Unity Labs, a division that the company started about a year ago to develop long-term projects. The lab's work focuses heavily on virtual reality, and one of the first things its employees did was survey developers about their pet peeves working in the new medium. The biggest one: making a game at a screen and keyboard, then having to stop constantly and put on a headset to see what it feels like to play.

Developing a way to make virtual reality games while actually being inside a virtual reality environment seemed like a logical solution. Unity wants to get a version of the demo West showed at GDC into its

customers' hands soon but hasn't set a release date. Unreal released its own version of the concept this month. The race to develop this particular feature is a reminder that virtual reality doesn't just mean big changes for games, but also big changes to the way they're made.

Photographer: David Paul Morris/Bloomberg

Anticipating these changes falls to Sylvio Drouin, an energetic Canadian computer programmer whom Unity hired last year to run Unity Labs. Drouin has a classic tech prodigy's background. He started coding at age 9 while growing up in Quebec—just as he was learning English, which he says was harder. Drouin dropped out of high school and bounced around various artificial intelligence and graphics jobs.

People who are excited about augmented and virtual reality like to talk about the "Wow Moment," that time when someone first decides that the technology is going to change everything. These conversations tend to sound like something you'd hear hanging out with a bunch of Timothy Leary acolytes. Once your mind has been opened, there's no going back.

Drouin, a thin man who often looks as if he is going to break out laughing, had his moment two years ago. He was using a Google Cardboard headset to take a virtual walking tour of New York. Drouin's interest in virtual reality has always been focused on developing new kinds of creative expressions. His wife, an erotic photographer, makes apps for Oculus that transport users into other people's sex lives. A stroll around New York seems a bit dull by comparison, but the way the scene drew Drouin in was a revelation. If a smartphone and a few bucks worth of cardboard could make him feel like he was across the country, more sophisticated forms of virtual reality could transport people anywhere.

"That's when I had goose bumps," says Drouin. He was already working as an adviser to Unity but accepted immediately when the company offered him a full-time job. "To be at the intersection of the future of storytelling and VR, that's what I wanted to do."

The first thing Drouin did at Unity was draft a manifesto that laid out his high-priority projects. A lot of these dealt with advances in artificial intelligence. Drouin makes a big deal out of what he calls "smart assets"—a library of in-game features that will anticipate what a game developer or artist may want to do with them. "The wheels know it's connected to a car, and the car knows it's on the road. The road knows it's on earth and supports moving objects," he says. Once the parts of the game anticipate what will be expected of them, it will be less work to get them to do those things, and people with less technical expertise can make VR applications.

The most ambitious plans have been put on hold while Unity tackles more prosaic short-term requirements, like advanced graphics research that will improve how its engine renders animation. This is one of the key challenges of virtual reality, which requires far more processing power than other types of games. To avoid making people nauseous, VR animation has to run at 90 frames per second, 50 percent faster than high-end games for PlayStation and Xbox. It also has to be done on two screens

simultaneously (one for each eye), which doubles the processing load. It's Unity's job to come up with a way to send this information in as efficient a way as possible, or virtual reality programs will just be too data-intensive for most computers to run.

Drouin is also recruiting like crazy. At his office after the Game Developers Conference, he's chatting up an artificial intelligence researcher he's trying to poach from a prominent Silicon Valley company. After that, he has dinner with another potential recruit. Hiring the best people is hard, Drouin says, because their employers tend to pay them well and do their best to keep them happy. A Wow Moment is required.

The following morning, the coveted job candidate spotted in Drouin's office, whose identity Unity asked be kept private, is hanging around in the wings of the auditorium after Unity executives gave a 90-minute presentation on new features and formally introduced the Labs project to several hundred developers. He looks interested.

—With Lizette Chapman