

MYTHS VS REALITY

WHAT YOU NEED TO KNOW ABOUT
DEVELOPING FOR THE MAC

Learn how to take advantage of the Apple ecosystem
while avoiding myths and misconceptions.



INTRODUCTION

The number of Mac users is growing by the day. In Q1 2021 alone, Apple notebooks represented an astonishing [94% quarterly unit growth](#) year-over-year, highlighting the ripe opportunity to develop your next game (or build an existing project) for macOS.

The Mac is home to critically acclaimed, commercially successful games, from the otherworldly aquatic depths of [Subnautica](#), to the classic cartoon stylings of [Cuphead](#), to the haunting shivers of solving a murder in [Disco Elysium](#).

Sometimes successful studios hesitate to develop for the Mac because they don't yet appreciate its power and flexibility for gaming. It's natural to be cautious about entering an unfamiliar development environment, especially when you're aiming to reach your fans on a platform for the first time.

Thankfully, today it's much easier to produce high-quality titles with top visual and gameplay performance on any Apple device. The Unity game engine has roots in its Mac-exclusive days in the 2000s, and these origins give Unity more than 15 years of expertise in bringing games to Apple users.

But even equipped with a winning team and clear goals, misconceptions can trip us up on our way to the finish line. Keep your project on track by seeing through the myths and misconceptions about bringing games to the Mac.

→ MYTH #1

THE MAC ISN'T FOR GAMES.

When deciding to bring your masterpiece to the Mac, you're not just serving lifelong customers who have been using a Mac computer for years. Apple newcomers seeking peak computational and graphical performance are also having their gaming needs surpassed thanks to the power of [M1, M1 Pro, and the M1 Max](#), Apple's custom SoCs found in their entire Mac lineup.

Both audiences were kept in mind by [ZA/UM](#), the developers behind *Disco Elysium*. Their beloved open-world title [won four honors](#) at The Game Awards (including Best RPG and Best Narrative) in 2019 and was tapped as Mac Game of the Year [in 2020](#).

ZA/UM initially conceived the game as a *Dungeons and Dragons* campaign, modified with standard and in-house rules that transformed into its own gameplay system. From there, though, it went on to birth a [mesmerizing interactive universe framing a haunting, introspective narrative](#) that's earned mass critical acclaim.





→ REALITY

APPLE SILICON-FUELED MACS OFFER INCREDIBLE PROCESSING POWER FOR STUNNING GAME EXPERIENCES.



While ZA/UM began working on turning that setting into its first video game, Apple hadn't yet released some of the more impressive and innovative hardware that's available today. That didn't stop them from working from the bottom up while developing for the Mac.

"You want to make sure it runs on as many devices as you can," ZA/UM chief technical officer Heiti Kender explains. "There's a small but very vocal minority that still wants to use their 2012 MacBook Air. We were optimizing on both fronts, and those optimizations from the older computers helped on the M1, as well."

It was the versatility and enduring resilience of those Apple devices that afforded ZA/UM the opportunity to future-proof aspects of *Disco Elysium*'s production. While the clandestine artistry of the world of Revachol renders within the game up to 4K resolution on current MacBooks and iMacs, test screenshots showed it was possible to go past that to 8K and beyond.

The studio even has aspirations to run natively on the monitor displayed in the second-largest Apple Store in the world; at the London's Covent Garden location, close to ZA/UM's UK offices. It's a testament to how even the most audacious dreams of Apple developers are made possible by the Mac.

→ MYTH #2

YOU NEED A MAC TO START BUILDING FOR MAC.

While there are bound to be people who personally or professionally own MacBooks and iMacs on your production team, studios don't always start with a fleet of Apple products dedicated to developing for the platform.

Luckily, you can use a Windows PC development environment and still ship on macOS for greater workflow flexibility.

Unity supports building macOS builds natively from Windows, allowing an adaptable workflow that fits your team's schedule. These options offer a great way to set the pace while working out production milestones and release windows for your title across any and all platforms.

As development continues, you should test your games on at least one Mac device. This will let you see polished iterations

running natively, especially when you start to develop for Mac computers with Apple silicon and take advantage of the Metal API and its development options, such as [Frame Capture through Xcode](#). It also pays dividends when seeking access to further devices in the Apple family.

ZA/UM used multiple Apple products when developing *Disco Elysium* for macOS, and transferring data across devices was quite simple. "When you make a backup and restore it to another Mac, it's identical," Kender explains.

"We cloned everything to the backup drive, took a train (from London) to Brighton, and set it up; it was done in a day. It's very scalable. Everything Apple has, from laptops to iPods, to iPhones, all the devices; you can scale it like nothing else."

Cross-platform compatibility and hardware reliability come standard when developing for macOS, especially when transferring over from Windows PC.





→ REALITY

YOU CAN TAP
INTO MAC'S VAST
AUDIENCE FROM
ANY DEVELOPMENT
ENVIRONMENT.



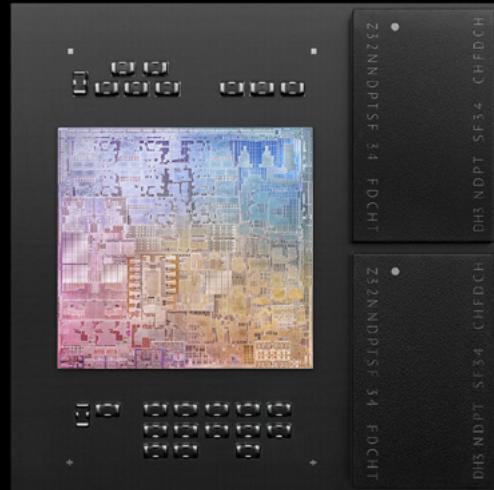


Image courtesy of Apple Inc.

→ MYTH #3

MACS ARE TOO COMPACT FOR PEAK PERFORMANCE.

It's understandable to assume, since Mac notebooks are so compact, that they wouldn't have the power necessary for high-performance gaming.

But Apple took their knowledge of designing industry-leading chips for more than a decade for iPhone, iPad, and Apple Watch and applied it to the Mac by creating three breakthrough chips: M1, M1 Pro, and M1 Max.

All three chips offer high-end graphics performance while using significantly less battery. MacBooks powered by these chips offer a truly unique gaming experience where users have peace of mind they can game for hours on-the-go without compromising performance.

The ingenuity of the chip concept aligns with Apple's modernized design philosophy. It unlocks more optimized GPU memory on the hardware, empowering macOS developers with a graphical and technical depth never seen before.

The adaptability of the chip allowed ZA/UM to explore creative solutions when developing *Disco Elysium: The Final Cut* for macOS. As the first Made with Unity title developed natively for Apple Silicon devices, they sought a plethora of new voices to enrich players' enjoyment of their epic narrative.

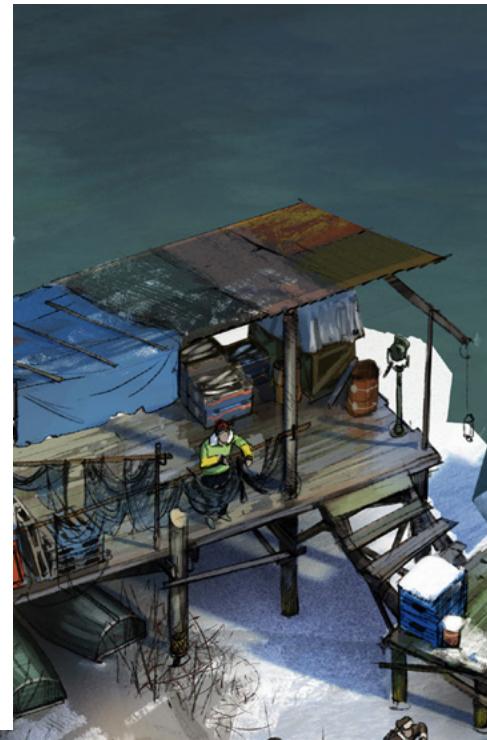
ZA/UM recorded a staggering 1.2 million words in the process, more than double that seen in *The Lord of the Rings* books and *The Hobbit* prequel. With the team working remotely, voice actors used iPads and the sound engineer leveraged a Mac Mini to keep everybody safe and distant while maintaining their workflow.

"At first, they were like, 'It's such a small machine... can it run this?'" Kender recalls. "On the back office Mac Unity builder (workstation), when we were building the game, it had to crunch 20GB, or something like that, of data. Mac was three times faster than any PC we have. If it builds, I know for sure that it runs on that Mac Mini for the sound engineer, for the actor reading in. That solution took away a lot of headaches."

With the computational transition to Apple silicon, we see a development space on the Mac that will not hinder creativity, functionality, or possibility. Instead, we're seeing developers feel at ease knowing they can run through data processes quickly and more reliably thanks to the hardware innovations made available to them.

→ REALITY

NEVER UNDERESTIMATE
THE PERFORMANCE OF
THE MAC.



→ MYTH #4

YOU CAN'T GO BIG ON GAME GRAPHICS.

To reach a pristine 4k 60 fps gaming experience at home on the iMac and on the go with MacBook was once thought impossible. Those previously unattainable heights are now a reality. However, the ambition to reach a bold visual fidelity starts much earlier than what you see in a final release build.

Having established the capabilities of the hardware, the next stage is creating gorgeous gameplay environments. It begins when you're building and iterating on the project at its earliest stages.

Creating games in the Unity engine offers benefits up and down the line, from the choice of multiple render pipelines at ground level to checking in with seasoned Mac tech experts for solutions guidance. The latest engine tools and support options allow you to take your creative vision and make it pop on the screen.

It's not enough to wow players with crisp, awe-inspiring visuals. The game needs to run as smoothly as possible on Mac hardware to avoid frustrating players with inconsistent inputs. The [Unity Profiler](#) runs optimization checks that locate the pain points and bottlenecks in the pipeline, so you and your team can fix each issue at its source.

Continuous upgrades in the Unity software like the [Progressive GPU Lightmapper](#) work in harmony with Apple's offerings at both the coding and hardware levels. Unity's optimizations for tile-based GPUs are advantageous for the M1 chip, which has a unified memory architecture that makes it easier to perform efficient and speedy tasks.





We've already touched on an example of Apple hardware outputting at UHD resolution with *Disco Elysium*. However, being paired with a high frame rate in an open-world RPG, complete with sprawling vistas, keeps Mac users immersed and responsive to the highly stylized universe ZA/UM created.

It was in no small part thanks to the Scriptable Render Pipeline chosen by the developers, who pushed the limitations of the engine's performance by layering realistic snow and rain across the breadth of the city landscape.

"Those are particles, it's not in a loop. You can follow every snowflake where it goes," Kender says.

Generating those particles atop existing characters, objects, and textures displayed onscreen, which was a challenge for the development team. Still, Kender explains that it was a personal idea to have the game running as well as possible on the M1, and this guided the team toward a consistent, high-octane performance while using native resolution assets.

"We are always looking for optimizations but not at the cost of our artistic level," elaborates Kender. ZA/UM used Amplify Texture, a Unity Profiler, and other engine tools, ensuring they didn't have to make sacrifices to their technical or artistic visions.



→ REALITY

HARNESS THE RIGHT
DEVELOPMENT TOOLS TO
UNLOCK THE AMBITIOUS
GRAPHICAL FIDELITY AND
AWE-INSPIRING VISUALS
POSSIBLE ON A MAC.

→ MYTH #5

BUILDS FOR MAC ARE MORE COMPLICATED THAN OTHER DESKTOP PLATFORMS.

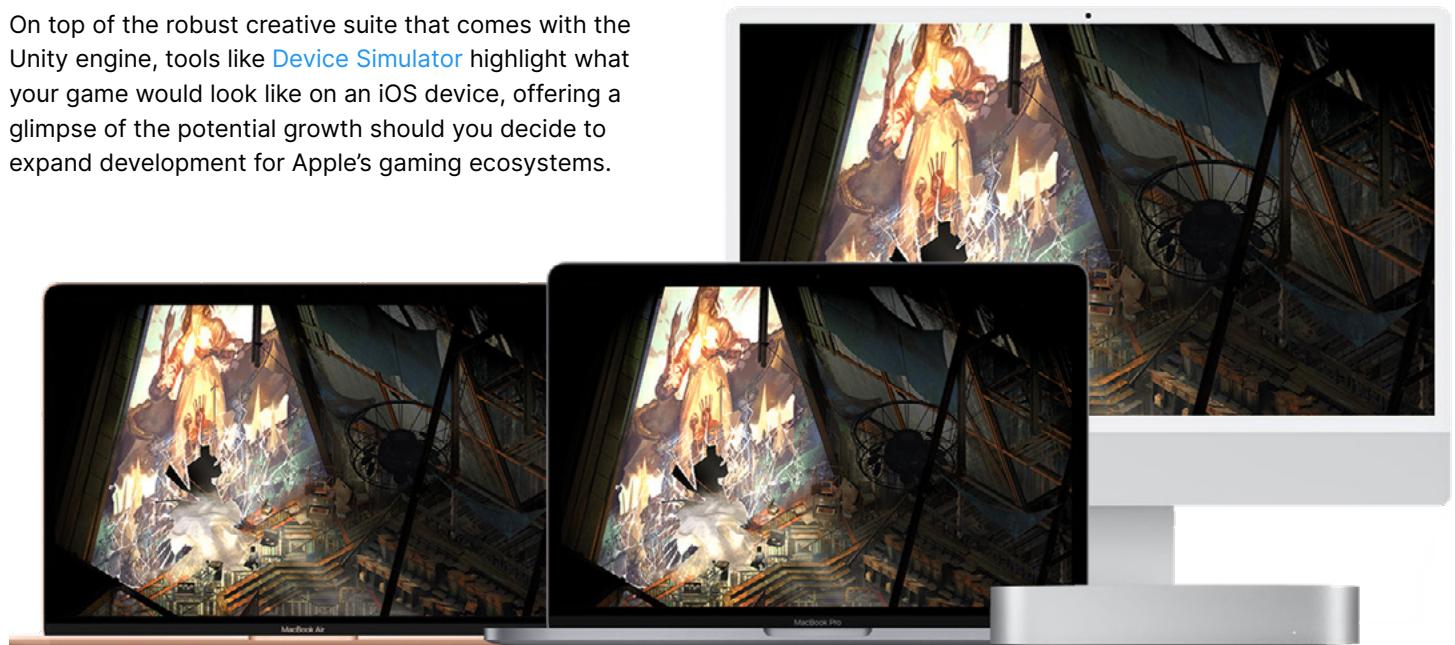
As much as one can dream, there's no magic formula that unlocks a flawless, carefree development cycle. Making video games is a challenge no matter what platform you develop for.

Even for those with years of game development experience, it sometimes takes an outside perspective to break through problem areas. There are always options to make the content creation process more straightforward as you strive for perfection.

Apple also provides [macOS notarization](#) as an additional checkpoint that ensures quality execution on your build as you get closer to launch. It verifies that your title is operating as intended and guarantees that your executable is free of malicious content as an extra assurance to end users.

When looking to build macOS projects for a large audience on a third-party engine, [Unity Pro](#) leverages the company's storied partnership with Apple to provide streamlined, knowledgeable platform support.

On top of the robust creative suite that comes with the Unity engine, tools like [Device Simulator](#) highlight what your game would look like on an iOS device, offering a glimpse of the potential growth should you decide to expand development for Apple's gaming ecosystems.



ZA/UM published *Disco Elysium* on macOS just a few months after their initial PC launch. Despite it being the studio's first video game project, the support they received from both engine technicians from Unity and Apple's Metal Ecosystem team was instrumental to the technical success of the game.

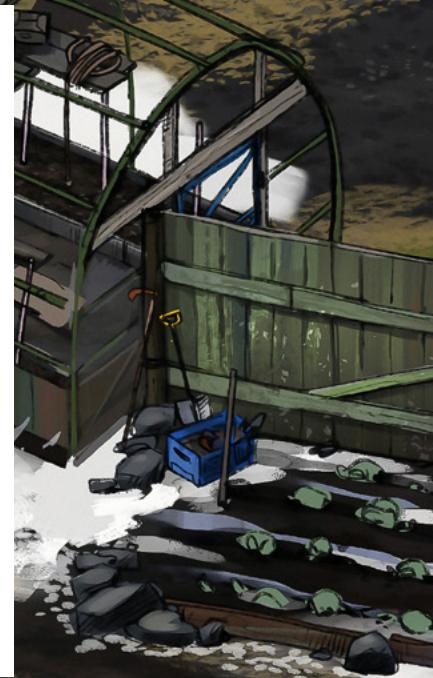
Unity Pro provided the team support for both the original and native M1 versions when developing for Mac, which, as Kender puts it, "got everything sorted at a really fast pace." Through their partnership with Apple, the engineers had access to supreme knowledge of the hardware and software ecosystems, going so far as to call their representative "a brother in arms."

"He was crazy good at what he does," ZA/UM head of publishing Mikk Metsniit proudly exclaims, going so far as to call their representative "a brother in arms."

"We sent him the build of the game or asked for his opinion, and he came back with five to 10 pages of what we can do to improve it, ran it through all his analytical tools, performance tools, all that other stuff. He always had new ideas on how to make it better and better."

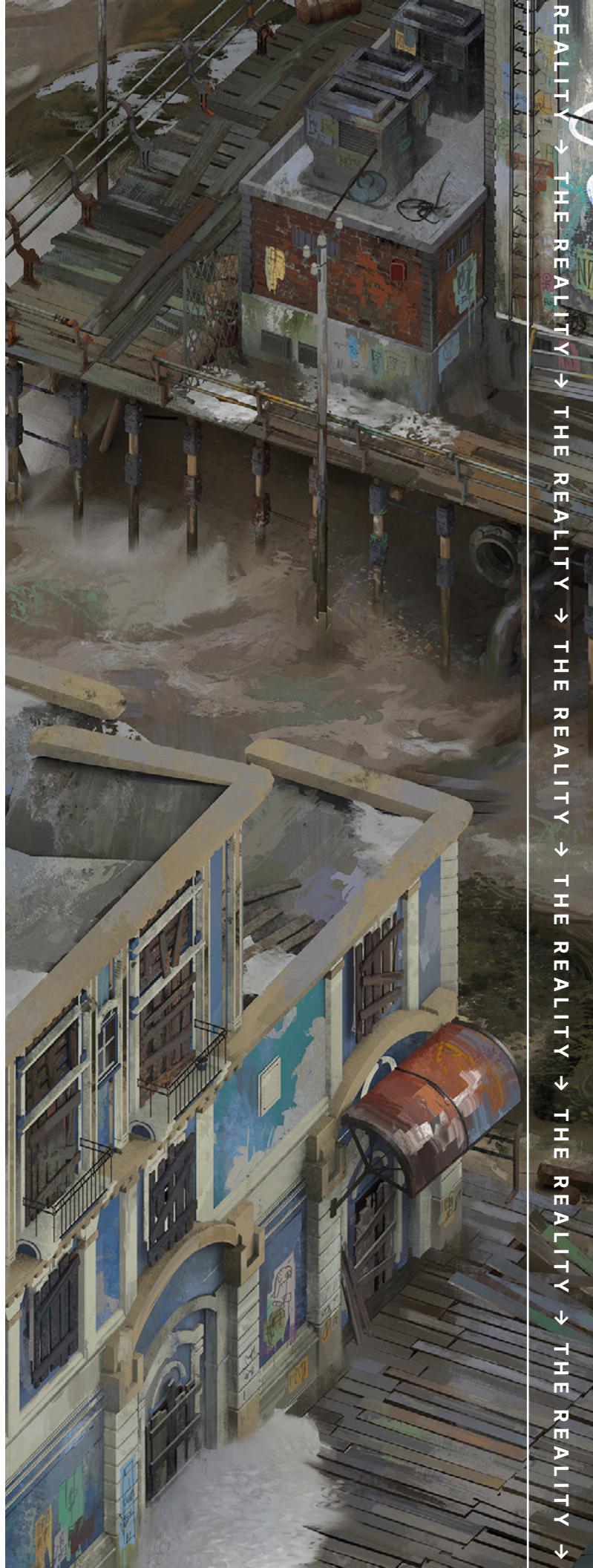
When you have foundational partners who are excited by your success and share their knowledge of how to best use the tools at your disposal, making video games can feel like a breeze. Imagine how simple it must feel with a second title, third, or an entire gaming empire under your belt.

→ REALITY
**BUILDING GAMES
IS HARD FOR ANY
PLATFORM. MAKE SURE
YOU HAVE THE TOOLS
TO DO IT RIGHT.**



THE GAMING POTENTIAL OF MAC IS A REALITY.

- Apple silicon-fueled Macs offer incredible processing power for stunning game experiences.
- You can tap into Mac's vast audience from any development environment.
- Never underestimate the performance of the Mac.
- Harness the right development tools to unlock the ambitious graphical fidelity and awe-inspiring visuals possible on a Mac.
- Building games is hard for *any* platform. Make sure you have the tools to do it right.



TAKE YOUR GAME TO MAC WITH UNITY.

"At Unity, we believe the world is a better place with more creators in it, so we work closely with partners like Apple to deliver the best possible experience for those creators, on the widest range of platforms. With the increased performance and power of the latest Apple silicon pro chips, you can make more complex scenes, bigger games, better games, all on your laptop."

- Nick Rapp, Senior Director, Platform at Unity

There's never been a better time to make a game for Mac. Hardware advances unlock performance that powers stylistic, bold visuals across the platform, proving that Macs can maintain pace no matter where you begin your build. Software tools from both Apple and Unity are essential aids that will help you to push the limits of your creative potential, never holding you back.

Now is the time to think different. Now is the time to expand your horizons and reach your players where they want to play.

Bringing your game to Mac is a great [first step](#) into the Apple ecosystem, opening you up to an audience eagerly awaiting new and exciting gaming experiences. Unity also has your back with [Unity Pro](#) support for everyday development needs and an [Enterprise plan](#) to get larger teams up to speed with the latest engine upgrades.

If you're still unsure about making the move to Mac with Unity, [speak to a Unity expert](#).

