



White paper

Make games - not tools

Why some of the world's
most respected and
experienced game studios
have moved to Unity

What's in this report?

In this report, some of the world's most respected and experienced studios have shared insights on their move from custom technology to Unity.

From in-house tech to Unity

Get insights from the studios behind brilliant titles like Hearthstone, The Bridge, Grow Home, Plague Inc., and Hitman Go about why they switched from in-house tech to Unity, including:

- Impact on work processes
- Lessons and best practices
- Technical considerations
- ROI and benefits
- Evaluation checklist
- Top adoption tips

1. Why move from custom tech?

In this section, we'll see why a number of successful studios moved to Unity despite having access to a custom solution, or an internal framework built from a combination of proprietary code and open-source solutions.

Focus on the art of making games

Some of the studios mentioned in this paper have turned their backs on custom tech completely, while others are using an external engine on select projects. What unites each, though, is that they've turned to Unity because of a desire to focus more purely on the art of making games – rather than maintaining tools.

Take for example, Hibernum Creations, which used Unity for numerous games, including Fruit Ninja Kinect 2, Calling All Mixels the Disney Infinity IP.

“Now that we have moved our production pipeline to Unity, the focus can be more on gameplay and fun factor than making tools,” says Mario Lefebvre, Hibernum’s Studio Tech Director. “Using other solutions in the past, we had the burden of developing all the tools we needed. Unity’s Asset Store also brings us a lot of ideas. And being able to develop our own plug-in applications allows us to customize our platform to accelerate development and raise the quality bar across the entire studio.”

“Now that we have moved our production pipeline to Unity, the focus can be more on gameplay and fun factor than making tools”

– Mario Lefebvre, Studio Tech Director at Hibernum’s

Greater creative freedom

Another common reason studios with in-house technology have moved to Unity is the quest for ever greater creative freedom. And it is not just the micro-studios and risk-adverse start-ups. Even highly established teams have turned to Unity for a more agile and creative development platform. It also offers a way to keep pace with a changing industry and market, without sacrificing revenues.

Creative Assembly has been making console and high-end PC games for almost 30 years, famously delivering the Total War strategy series, and more recently beguiling critics and players with Alien: Isolation.

Experimenting on mobile

The team decided they wanted to try their hand in the mobile market. They delivered on that ambition with the Total War Battles series, adapting their acclaimed strategy IP for touch-screen portables, and later Steam.

“As Total War Battles: SHOGUN was a complete experiment at the start, we were not even sure we could complete the project,” says Renaud Charpentier, Game Director at Creative Assembly, a studio that at the time had two well developed internal engines; one for PC and one for console.



Total War Battles: KINGDOM, Creative Assembly

“We started with a very small R&D team, just to look at what we could do. That meant the option of building our own engine was completely out of the question, because we would have to invest in using far, far more programmers and so on, just to be able to see if it was worth trying.”

Build an engine from scratch? Not an option

Charpentier and his colleagues needed to move quickly and experiment, meaning external technology was the best option. It would allow the team to concentrate on their game concept rather than the technology. Unity was the practical, functional and cost-effective platform of choice for the prototyping stage.

“We wanted to see, for example, how many 3D characters we could render on what were then new smartphones,” says Charpentier. “We didn’t know what was possible, and we knew that would mean animation skinning, rendering, a bit of shading, etc. To build something from scratch that could render many 3D characters on screen would mean quite some work. That’s when we knew it would be best to look at middleware.”

What started as an experiment turned into a successful commercial release, first with Total War Battles: SHOGUN, and then with the sequel Total War Battles: KINGDOM. There was no need to invest a fortune on engineers, or take them away from roles on maintaining vital internal tech for the wider company, and it helped Creative Assembly embrace a key trend: the phenomenal rise of mobile and tablet gaming.

STUDIO SPOTLIGHT

Creative Assembly

The AAA PC-strategy veterans with a commitment to authenticity have been bringing stories to life for decades.

Location: Horsham, United Kingdom

Founded: 1987

Custom engine games: Total War PC series, Alien: Isolation

Unity games: Total War Battles: SHOGUN, Total War Battles: KINGDOM

Why they moved to Unity:

Their custom engine didn’t offer the agility and iteration speed needed by a self-sufficient internal team experimenting with mobile and tablet.



We'll come back to exactly how they managed that a little later. But first, let's look to an even larger game maker that adopted Unity in their pursuit of creative experimentation and expression.

New (game) world explorers

A few hundred miles north of Creative Assembly, another famed, long-standing UK game studio has made waves after adopting Unity. Reflections is part of the nearly 9000-strong team that globally makes up Ubisoft, and which released the captivating platform adventure game, *Grow Home* in 2015.

More commonly associated with the *Driver* series, and contributions to *Just Dance* and *The Crew*, Reflections has over 30 years of internal tech to its name. After joining the Ubisoft family in 2006, they gained access to a global portfolio of internally developed solutions and other middleware. So why turn to external technology for the distinct *Grow Home*?

"The motivation to use Unity was really about challenging some of our perceptions about big game development and to see if we could do things on a much smaller scale, and put the constraints of a very small team and short timescale, to see if it would force us to make quick creative decisions and come up with something more interesting," says Peter Young, Producer at Reflections.

Like Creative Assembly, Reflections picked Unity for several specific benefits, from multiplatform to efficiency, and we'll return to that. But speaking broadly, as the Creative Assembly and Reflections cases show, Unity can present studios with proven technology, which gives them the opportunity to explore new paradigms in game making.

Taking the creativity with you

On the other side of the Atlantic, another global game powerhouse was embracing a new developments model. Square Enix Montréal has found that the move from proprietary engine to Unity has given them a new kind of creativity ideal for the mobile market.

"The motivation to use Unity was really about challenging some of our perceptions about big game development" – Peter Young, Producer at Reflectionsnum

The Square Enix Montréal team was familiar with AAA console development using an in-house solution. In order to take their Hitman IP to mobile for the hugely popular Hitman GO and its newly released sequel Hitman: Sniper, however, they needed a new engine. Unity allowed them to maintain their creative culture without upsetting the broader infrastructure of the studio.

“At Square Enix Montréal, we have a strong creative culture,” says Martin Ruel, Technical Director at Square Enix Montréal. “Even when we were making console games, we were using the Unity engine to support our prototyping phase: it was super easy to use, to create behavior and to integrate assets into our prototypes. Moving to Unity for mobile really helped us focus on crafting compelling experiences instead of spending critical time building engines.”

STUDIO SPOTLIGHT

Square Enix Montreal

The Square Enix Montréal studio is comprised of some of the parent company’s most experienced talent.

Location: Montréal, Canada

Founded: 2012

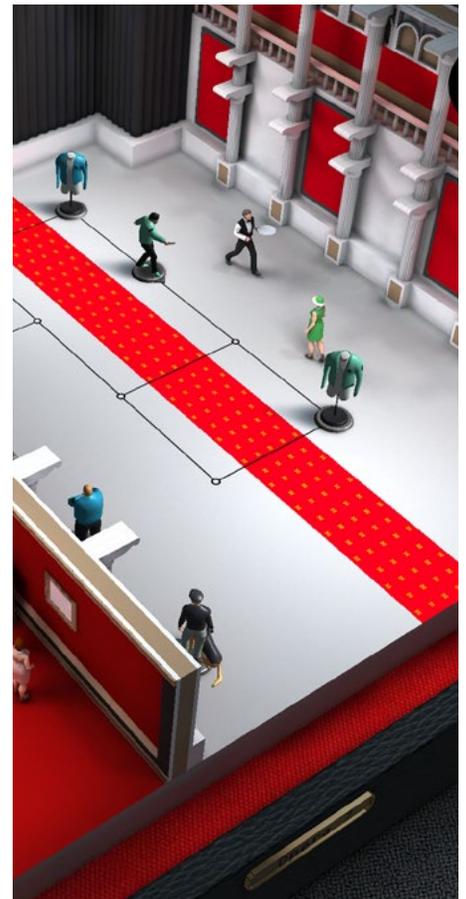
Custom engine games: Final Fantasy, Dragon Quest, Kingdom Hearts

Unity games: Hitman GO, Hitman: Sniper, Lara Croft GO, Deus Ex Go

Why they moved to Unity:

They needed an engine that would allow them to move fast and experiment in the world of mobile games.

square-enix.com



When AAA quality comes to mobile

Blue Byte is another Ubisoft studio in Germany that turned to Unity to help them do justice to a popular IP on the mobile platform.

“We were taking on a huge brand with Assassins’ Creed. It’s a brand that means a lot to a lot of people,” confirms Achim Moller, Technical Director at Ubisoft Blue Byte. “We needed to deliver Assassins’ Creed on mobile with the AAA quality players were used to. That was a challenge, and we looked to Unity.”

An engine for an animation-heavy game

From a technical standpoint, if Assassin’s Creed is famous for one thing, it is the animation that enables the series’ fluid climbing and evasion systems. But none of Ubisoft’s existing internal technology supported mobile in an appropriate way for an animation-heavy 3D game.



Assassins Creed Identity, Ubisoft BLue Byte

“I think that the main reason we chose Unity was that the engine has a very powerful animation system, and we were making an animation-driven game,” says Christian Schell, Senior Lead Programmer on Assassin’s Creed Identity at Ubisoft Blue Byte.

“Cross-platform support was also important, and we wanted to support a lot of different platforms. The engine is easy to learn, and the editor is easy to extend and modify. C# is the current language, and if you want to recruit new team members you can find a lot of talented people that know how to use C#.”

STUDIO SPOTLIGHT

Ubisoft Blue Byte

A leading games developer with a success story dating back over 25 years, the studio builds, among other things, on the major brands of parent company, Ubisoft.

Location: Düsseldorf, Germany

Founded: 1988

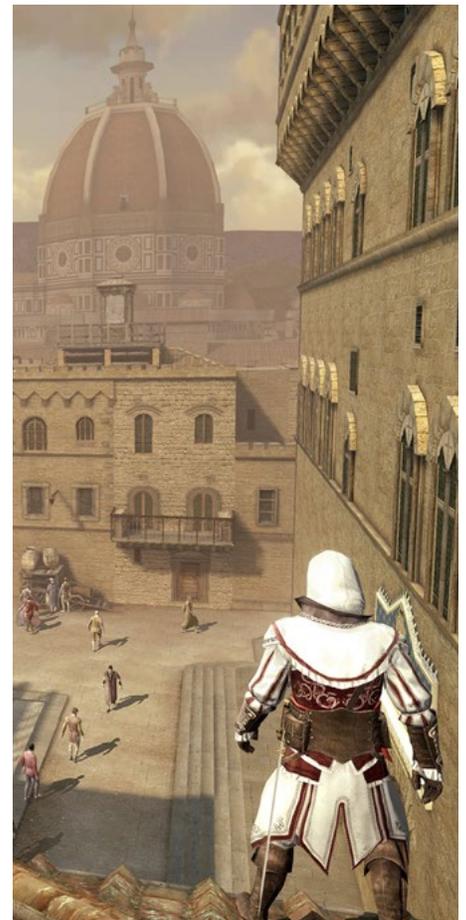
Custom engine games: Settlers, Might & Magic: Heroes Online (collab.)

Unity Games: Assassin’s Creed Identity

Why they moved to Unity:

Blue Byte needed engine they could use to take the full animation-heavy 3D game to mobile.

www.bluebyte.com



The licensing model can be crucial

For most in game development, paying the bills is a fundamental concern. This is why the terms of middleware licenses can really matter. For many of the teams that adopted Unity after working with custom platforms, it was Unity's licensing model that made picking the engine a clear choice.

Specifically, it is the fact that Unity does not charge on a per-title basis, and that it takes no revenue or royalty share from games that use the engine.

"We looked at other engines," says Ubisoft Blue Byte's Schell, "but the technology and fair licensing model Unity offers made it the obvious choice for our team."

For Creative Assembly's Charpentier, it was a similar story. "With Unity we just needed to purchase a couple of licenses, and it meant that if we ever pushed forward and published we could do so at no extra cost, as that was included in the license.

"That made it simple. Instead of hiring a lot of programmers to build a custom engine for a project that might not be released, we could spend a small amount of money and get started, and publish if we needed. That worked for the senior Creative Assembly management when they saw my proposal, so we started working with Unity," Charpentier says.

Back in Northern England at Reflections, the licensing model also made the decision to adopt Unity for the Grow Home project easier. "The licensing model worked well for Grow Home itself," says Young. "We're targeting PC first, and paying per seat worked perfectly in letting us be flexible with the size of the team, and the costs were very reasonable."

"We're targeting PC first, and paying per seat worked perfectly in letting us be flexible with the size of the team." – Peter Young, Producer at Reflections

A reputation for being fast (in a good way)

There's another advantage a move from custom to external tech can often engender, and it is one Unity in particular is famed for. Thanks to large engineering teams, years in development, and in the field, as well as continuous updates, Unity can provide direct, streamlined and fast-paced development and iteration times.

Those who know Unity even a little will be aware of its reputation where efficiency is concerned, its suitability for prototyping, as well as how it frees visually minded developers, artists and designers to work virtually at the speed of their ideas.

As polished and awesome as can be

When the influential Blizzard Entertainment, for example, opted to move to Unity to extend its IP to the realm of tablets, they enjoyed significant efficiency benefits.

Demonstrating that they weren't too established for new ideas, Blizzard has delighted its existing fan base and reached vast new audiences with its digital card game, Hearthstone: Heroes of Warcraft, which employed Unity for the studio's first ever mobile release.

“The simplicity with which we could prepare builds meant we could develop it very openly, and keep the rest of the studio in the loop constantly.” – Peter Young, Producer at Reflections

“One of the things that really made Unity a great solution for us is that we really like to iterate here at Blizzard,” says Hearthstone: Heroes of Warcraft’s production director, Jason Chayes. “That’s one of the things that’s been core to our game development process in the past. We spend a lot of time going over the mechanics, multiple times, and working on them to make sure they’re as polished and as awesome as they can be.”

“The iteration speed is brilliant, especially on a smaller project,” adds Ubisoft’s Young, “as was the build-edit-continue loop. Being able to edit live in your game environment works really well for us too; it proved very efficient for us.”

What’s more, according to Young, the efficiency benefits didn’t stop with Reflections. “The simplicity with which we could prepare builds meant we could develop it very openly, and keep the rest of the studio in the loop constantly. We could push builds out to the studio and the broader Ubisoft family. Making a build and being able to share it resonated across the studio.”

The team at Frima Studio, which specializes in client work, has also benefited greatly from Unity’s efficiency. This is apparent when contrasted to their custom solution, which they switched from after many years.

STUDIO SPOTLIGHT

Reflections

Having been in the business of making games for over 30 years, Reflections is no newcomer to building interactive worlds and the technology that supports them.

Location: Newcastle, UK

Founded: 1984

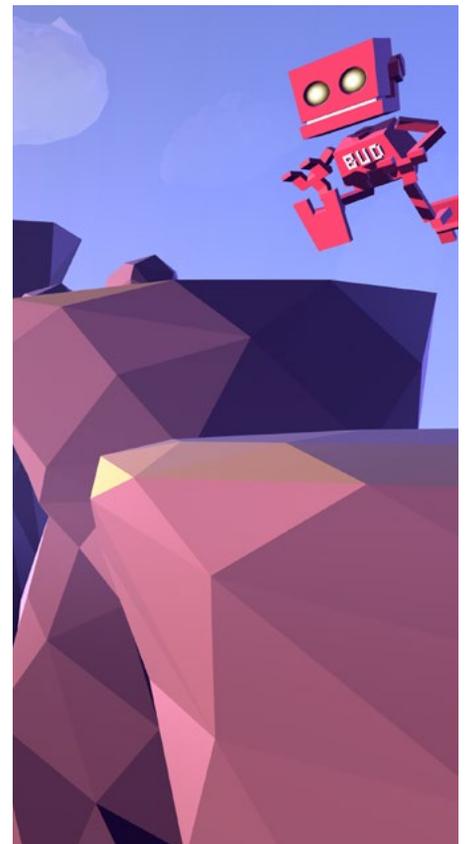
Custom engine games: Shadow of the Beast, Driver, Driver San Francisco, The Crew (collab.), Just Dance (collab.)

Unity games: Grow Home

Why they moved to Unity:

With the Grow Home project, the Reflections team wanted to embrace creative, nimble development with a small internal team and a game that didn’t fit into a familiar mold.

reflections.ubisoft.com



“With our custom engine, Icewave, the changes in the prefabs or instance values were not transferred in real time, making the iterations slower as they needed to close the game, make the modifications and restart it,” says Jean-Philippe Doiron, Director of Technology at Frima. “Even though they were able to set their spawn point instead of restarting from the main menu it still took more time.”

With Unity, on the other hand, they are much more efficient.

“For the designer, being able to press play and jump directly in the game and change the instance’s values in real-time makes all the difference. C# is also an easier language to grasp than C++. This wasn’t an issue for us, but I can see examples where the designer will be able to create and tweak his own gameplay logic.”

STUDIO SPOTLIGHT

Frima Studio

Since its humble beginnings over a decade ago, Frima Studio has grown into a thriving developer with an impressive array of its own IP.

Location: Quebec City, Canada

Founded: 2003

Custom engine games: TBC

Unity games: TMNT: Ninja Turtle Tactics 3D, Nun Attack

Why they moved to Unity

As the studio expanded, it needed to deliver the quality expected by many of the world’s biggest brand holders. That meant moving away from two custom engines, which supported 2D and Flash respectively.

frimastudio.com



Reaching more audiences

Adding support for new platforms to custom engines can sometimes feel like more effort than making the game itself. That alone is a compelling reason to ponder using an engine from outside the studio's walls. An engine that already has cross-platform support and enough engineering resources to keep pace with new platforms allows you to focus more on developing gameplay.

If Unity is famed for anything more than its efficiency, it is perhaps its cross-platform abilities. For developers adopting the technology, that appeal crosses the boundaries of different types of studios. Multitplatform support was important for the small but mighty Ndemic, which wanted to move beyond the custom-powered iOS version of its hit disease control-themed puzzler Plague Inc. And it was equally significant for Activision Blizzard, which went with Unity to expand the World of Warcraft Universe and take the IP to vast new audiences.

So let's take a look at why Unity's cross-platform capabilities are valued by the game-makers.

Peter Young

Producer
Ubisoft Reflections



"The biggest thing was that Unity kept our options open in terms of target platforms. Unity made those options comparatively cheap to pursue, if we wanted to. We very much focused on PC as our main platform, but because we were finding our way with Grow Home, we wanted to keep our options open as much as possible. We knew that if we developed in Unity, we would have the freedom: the freedom to explore mobile, and even the next-gen console."

James Vaughan

CEO & Founder
Ndemic



"One aspect of a game engine that is very important for our studio is the collection of platforms supported. As a game company, we need to reach as many players as possible, and that's something that Unity does right compared to other solutions out there. Unity enables us to develop for iOS, Android, Windows, Web, and all major consoles. That is a key differentiator."

Martin Ruel
Technical Director
Square Enix Montréal



"We wanted cross-platform play. In this day and age, it is so important to get your game onto as many platforms as possible, and it was more complicated than I had hoped to get our game onto Android using our custom engine. If you go to all the effort of making a game and you are lucky enough that it becomes a successful game, then you are going to really need to make sure that you can get it out to more people without having to incur more technical costs. In general the defining way for smaller game developers to succeed in this modern industry of ours is to be able to get their game as easily as possible onto as many platforms as possible. And Unity provides a very valuable service in ensuring that."

STUDIO SPOTLIGHT

Ndemic

A true indie success story, NDEMIC's Plague Inc. title has managed to hold impressive positions in game charts across the globe, while garnering praise from the scientific community for engaging the public with important issues around the spread of infectious diseases.

Location: London, UK

Founded: 2012

Custom engine games: Plague, Inc.

Unity games: Plague, Inc. Evolved

Why they moved to Unity:

Unity made it relatively quick and painless to move games from PC to Mac.



Community and support

The reasons studios move to Unity from pure custom tech are diverse. There is, however, one theme that has defined Unity since its earliest days: community. Together with Unity's own support, the broader community is huge, responsive and far reaching. It has long been established as a place of proactive knowledge sharing.

"The Unity support group and many tutorials on the web have been important because it's your first line of defense when you have a bug and you don't know how to solve it," offers Square Enix Montréal's Ruel. "We solved tons of platform-specific problems just by Googling the stack trace, error number or error description."

Easier to find what they need

Elsewhere, a visit to Reflections tells a similar story. "With Unity being a commercial product, there's a broad user base out there," says Young. "There's the formal support channels and direct contact with Unity, but also all the other developers that are using Unity and sharing their experiences. That's made it a lot easier for us to find what we need, and find examples, or to some degree to find plug-ins and assets. That made things a lot easier for us."

Making things easier for game creators is a core principle at Unity. For many, though, it is a combination of various benefits that push them to adopt Unity. Continuous updates, platform and technology support, a proactive community, a practical licensing model, the Asset Store, a large talent pool and other aspects of the Unity ecosystem all enable creators to spend more time making games than maintaining tools.

There are many reasons to adopt Unity. In the next section, we'll look at the experience of moving beyond custom tech.

"We solved tons of platform-specific problems just by Googling the stack trace, error number or error description." – Martin Ruel, Technical Director at Square Enix Montréal

2.

Integrating an external engine

So far we've heard what motivated studios to consider moving away from their custom and in-house technology. For each of those outfits, however, making the decision to go with Unity was just the beginning.

Having adopted the engine, they had to integrate it into their pipeline, their creative process, and their talent pool. Here we'll look at what that process involved.

Ramping up the team

It would be unrealistic, of course, to suggest developing a game is ever without complexity. In the case of Unity, however, the learning curve relatively low compared to other game engines. Many people in the industry are already familiar with the interface and, for developers, the transition to C# tends to be smooth.

A bigger pool with more talent swimming around

“Unity is well known by so many people. Even developers on a junior level are familiar with Unity, as it is already used in university training,” states Ubisoft Blue Byte’s Technical Director Moller. “Senior developers appreciate Unity’s nice interface and editor. It is fairly easy for them to understand it visually. The hurdle in getting new team members working with Unity is very low, which helps in terms of production and team composition.”

Moller’s sentiment isn’t an isolated one, either, and if you talk to the many studios that have adopted Unity, they will likely tell you a similar story. “I think getting into that engine [Unity] is easier than most engines I know,” says Square Enix Technical Director, Ruel.

“Since Unity is a widespread engine, it is easier to hire somebody that has got Unity experience, which is an important factor for game studios. Hiring a developer that is already trained with the studio’s engine facilitates the onboarding of new employees. In a normal AAA console development, every time you hire someone, you can rarely take advantage of their previous knowledge, because they’re going to work on an engine they have never worked with in the past,” Ruel says.

There is a caveat, though. Talent, adds Ruel, is more important than

“Since Unity is a widespread engine, it is easier to hire somebody that has got Unity experience.”

– Martin Ruel, Technical Director at Square Enix Montréal

knowledge of an engine, but having a wide pool of Unity-experienced potential hires to choose from means a better chance of finding a talented developer that is also knowledgeable.

The path from C++ to C# is a smooth one

With so many large scale custom engines making use of C++, Unity can be especially powerful in terms of easing the adoption of a new technology.

“The experience of bringing internal people over into the Grow Home team was relatively painless,” says Young of adopting Unity. “They all came in experienced with big engines and C++ development. The shift from C++ to C# is a lot easier than the other way round, and the tools in Unity are relatively intuitive. It was all pretty straightforward.”

Elsewhere, over at Creative Assembly, Unity’s support for C# also meant that retraining developers took place with remarkable pace, minimizing the impact at the wider studio as the tablet team took their internally developed prototype and reworked it into a commercial product.

“Often we had programmers, developers, artists and other teams in the studio start working on our Unity project, and our code base and database,” explains Charpentier. “Unity made that very easy. We had smart, experienced people working with us, but still it only took them a day until they were able to help us.

“Using C# was great, as it is so much more friendly than C++ or other stuff,” he continues. “Unity’s toolchains and editor are also very friendly compared to most internal tools, so usually the change was very easy; many needed just a couple of hours. We never had any trouble with people being able to adapt to Unity.”

From it’s earliest days, Unity has been a user-friendly platform that favors the human element of game making, and that core part of the engine’s DNA is clearly of benefit to those retraining and recruiting as they move from custom to external solutions. But while the people define a studio, pipelines and toolchains are the backbone of any team’s production process. This is something we will cover in detail over the following pages.

Technical integration: Reusing code and assets

Whether they are bringing in new talent or repositioning existing team members, adopting Unity complements most studios' staffing plans. But what about the impact from a technical perspective?

Firstly, many are surprised by how much functionality conceived and crafted for their custom engines can be reused in Unity. Assets, game logic, animation files or other fundamental building blocks from a given game can be moved to Unity. That's not to say Unity won't let you build the project you want from scratch, but if you're looking for efficient integration, or a time and cost effective way to return to IP in a new engine, Unity can be a powerful, flexible choice.

For the team building *Assassin's Creed Identity* in Unity, that was certainly the case, to the point where they could reuse assets from—not only the console and PC IP releases—but also from across the Ubisoft portfolio.



Assassins Creed Identity, Ubisoft BLue Byte

“It was very useful to have an asset pool available to us,” says Moller, Ubisoft Blue Byte’s Technical Director. “We could take a high-res asset from a high-res platform and see how we could get it into mobile using the Unity engine. That let us see that Unity had the animation system, the shading set-up and polygon counts we needed.

We adapted textures, used the same sound pool, and I think we reused all our animation files, but of course we had to re-skin them,” he says.

“Assassin’s Creed Identity is a very animation-driven game. The current version has around 2000 animations. With Unity, we were quickly able to build something where I could move around and begin to climb. That let me know we would be able to achieve a real Assassin’s Creed game on mobile.”

Drag, drop and prototype

Meanwhile, for Ty Taylor and the Quantum Astrophysicists Guild team, they were able to copy over vast amounts of code as they took their award-winning puzzler from its XNA roots to stand as a truly multiplatform game.

“We copied over most of the game from our custom set-up to Unity, because it was all C#,” explains the studio Co-Founder and Lead Developer on The Bridge. “All the core game loop, including all the Farseer code—which was the third-party open-source library that we used for physics—just copied and pasted over. It was that easy.”

Back over at Creative Assembly, there was an opportunity to use assets from the PC Total War series, as they re-appropriated the IP for mobile and touch devices. And as it happened, the very same process gave the team a chance to test Unity’s suitability as they began development; something to consider if your studio is pondering adopting the engine, and worried about time lost testing the engine. That time, it turns out, can also serve as a productive part of the development process.

“All the core game loop, including all the Farseer code—which was the third-party open-source library that we used for physics—just copied and pasted over. It was that easy.”

— studio Co-Founder and Lead Developer on The Bridge

See how your idea works before you commit

If you want to see how your game idea might be working, says Creative Assembly's Charpentier, it is better to use assets you already have.

"We could use characters and buildings and textures and so on. That let us prototype quickly. The rest of the studio was using industry standards like 3DS Max and Maya, and it was very useful to be able to take files, drag and drop them into our folder, and have them ported into Unity and ready to use from the start. And that's not the case with every engine we looked at. In some cases, you had to write your own importer script and put in quite a lot of work before you start."

Ultimately, that process also let Creative Assembly evolve its experimental prototype into a commercial release, which is when the team decided to stay with Unity.

"After prototyping we could have decided to switch engines, and we had that freedom," says Charpentier. "But Unity was the best engine for the 'redux' Total War we wanted to make, and at the time it was the only engine that could let us hit all the platforms that we wanted."

To rebuild or port, that is the question

Unity's multiplatform strengths prove a powerful pull for studios looking for a way around the roadblocks that custom engines present. But just how easy is it to port to different platforms in practice? Fortunately, for most it's remarkably fluid.

"What's really interesting, I think, was bringing Plague Inc. onto Mac and Linux from PC," says James Vaughan, CEO and Founder at Ndemic, which originally made its strategy game for iOS using custom tech built from the ground up internally, before porting it to Android in their custom engine.

"That was something that was incredibly quick and painless, compared to developing it straight to PC initially from our custom engine. It was wonderfully, surprisingly quick being able to get our game onto Mac from PC. Unity absolutely ticks off the cross-platform boxes in a way that our own custom engine just never could."

Name your platform

At The Bridge studio Quantum Astrophysicists Guild, it's a similar story. In their case, they had built their original game, The Bridge, in a modified version of the XNA framework, extended with custom tech. As noted earlier, they were able to reuse vast amounts of the game's code, but ultimately opted to rebuild it in Unity in order to gain the advantages of working in the editor.

"Building a game in Unity from scratch was, compared to XNA, much more comfortable, just because XNA doesn't have an editor. I'm a programmer, so I understand all of that stuff in XNA, but having an editor is just wonderful, because I can pause the scene and move stuff around and figure out exactly how it should look, and then unease the scene and everything is just there and ready for me. I can just save that off. In XNA, I actually had to write my own editor inside of the game."

And with the game running in Unity, the team has been so impressed with the ease of porting, they have taken their acclaimed title to Microsoft Windows, Xbox 360, Xbox One, Android, Amazon Fire TV, Ouya, PlayStation 3, PlayStation 4, PlayStation Vita and Wii U.

How do you make Unity part of your pipeline?

For many studios, adopting Unity, of course, also means tackling the process

of integrating it into their pipelines. Again, in that regard the engine has treated most users very well indeed.

“The Grow Home team were very self-contained and independent, and we had no integration hassles, really,” says Reflections’ Young. “We integrated Unity into our automated build process pipelines, which was straightforward, and it let the team get on without having to integrate into much else. Unity was perfectly suited to establishing an autonomous team within the studio.”

Over at Creative Assembly – another Unity user establishing a small, creative team within a larger, established custom technology-centric studio – things turned out similarly well. And based on that experience, the Total War Battles series Game Director, Charpentier, has some useful advice:

“Unity is a technical tool, so you need your leads to test and establish the project pipeline, and how code and art are generated and imported into Unity,” he says. “The best way is to simply do it. Generate one representative asset of each type and get it into the engine. A good test is to do one full character. When you have it literally running in the viewport, you’ve proved you can deal with textures, mesh, rigs, animations, basic shading and a very simple script to load that and play the ‘run’ animation in a loop. Add your favorite track of the moment to test sound, simple controls to rotate the camera around this running character and build that to your device of choice.

“If that mini project runs on your PC, console, tablet or whatever else, then you are off to a good start. Now send all these assets to your versioning system and have another team member retrieve them and execute the same build on their workstation. If they manage to beam the same ‘runner test’ on another device it means you already have the base of a working dev environment.”

Tools of the art trade

Back at Blizzard Entertainment – where multiplatform and rapid iteration strengths first attracted the team to using the engine – integrating the technology into the studio’s pipeline particularly impressed the team.

“We integrated Unity into our automated build process pipelines, which was straightforward, and it let the team get on without having to integrate into much else.” – Peter Young, Producer at Reflections

“A thing that was really great about Unity was that it had native support for a lot of the tools that our artists like to use—Photoshop and Maya—and can read in their base file formats, without having to go through some conversion process, which also sped up our process,” says Hearthstone: Heroes of Warcraft’s Production Director Chayes.

Chayes and his colleagues also enjoyed significant benefits to the production process by embracing content from the Unity Asset Store, and were particularly impressed with PlayMaker.

“That’s something we’ve used in the game to create scripted events alongside our animation system,” Chayes continues. “It was actually a big help in enabling our art team to independently make cool events in-game.”

Up to now we’ve looked at why teams choose to adopt Unity, and how that adoption works for the studio. Next, we’ll look at the lasting impact, and how the all-important return of investment plays out.

STUDIO SPOTLIGHT

Blizzard Entertainment

Blizzard is an unquestionable icon of the gaming medium thanks to the cultural giant that is the defining MMO World of Warcraft.

Location: Irvine, CA, US

Founded: 1991

Custom engine games: World of Warcraft, Diablo III

Unity games: Hearthstone: Heroes of Warcraft

Why they moved to Unity:

In order to accommodate their work processes and take World of Warcraft to new audiences on mobile devices, Blizzard needed an engine that supported multiple platforms and rapid iteration.

blizzard.com



3.

ROI & other benefits

All the benefits in Unity outlined up until now would not amount to much if not for the fact that the solution is also affordable and offers a significant return on investment. Traditionally speaking, ROI refers purely to financial figures. Some studios are able to share such ROI with simple statistics. Quantum Astrophysicists Guild, for example, saw a 66-fold return on investment with their game, *The Bridge*, in terms of the first few released Unity versions.

While others are not in a position to share their ROI figures, we can still take a look at how adopting Unity benefits their team in other ways, from promoting growth to attracting world-leading clients.

Time-to-market

As the old saying goes, time is money. And while it's cliché, it's also a truism. The quicker you can make your game, the sooner the revenues come in. The more game dev cycles you can squeeze from the years, the more your studio thrives, both creatively and commercially. It's a benefit many studios adopting Unity are enjoying today.

Over at Square Enix Montréal, for example, a positive impact on time-to-market has allowed a studio familiar with large-scale, long-form console projects to get a taste of a different kind of development pace.

"The change has been very positive for Square Enix Montréal," says the team's Technical Director Ruel. "We've been able to ship Hitman GO's first iteration within ten months, and we did it with a team of five developers. Unity helped us to get to market very fast. With Unity, we've been able to focus most of our effort on gameplay, and we have been able to have our first live experience extremely quickly and efficiently."

Putting the pedal to the metal

Work-for-hire studio, Hibernum, meanwhile, has enjoyed not just increased time-to-market with finished commercial projects, but also an acceleration of other processes within the team.

"Unity is taking care of most of the technical risks for us, and confidence in your engine is a definitive morale boost for the teams." says Lefebvre. "It improves time-to-market, but also our prototyping, which helps us to make a decision on what kind of games we want to make, and what the most important features are.

More than that, adopting Unity has also helped Lefebvre see the studio around him grow and expand, presenting an ROI that many would argue has more lasting impact than strong revenues alone.

"Unity is taking care of most of the technical risks for us. It improves time-to-market, but also our prototyping, which helps us to make a decision on what kind of games we want to make" – Mario Lefebvre, Studio Tech Director at Hibernum

“The most useful part of Unity, really, is the ease of use,” he explains. “It’s so simple to develop a prototype very quickly, and that makes a huge difference for us, as we want to test the gameplay as soon as possible during a project. Unity gave us that choice,” he says.

“Developing a video game is still a complex task, but using Unity saved us a lot of troubles. It’s well done and easy to use, so that simplified our growth as a studio. And now there are so many people using Unity, finding Unity developers is a lot easier than it used to be to find, for example, an engine developer,” Lefebvre says.

What’s more, as the studio grew, the number of juniors now experienced in Unity allowed Hibernum to expand its team from the bottom up. Not only did this give tomorrow’s dev stars a good start: it meant affordable recruitment that perfectly complimented rapid growth. When Hibernum adopted Unity, the team had around 30 developers and programmers and 12 artists. Within a year they had grown to a team of 160. While Hibernum itself deserves the credit for that remarkable growth, Unity provided some of the oil to the gears that powered the expansion.

STUDIO SPOTLIGHT

The Quantum Astrophysicists Guild

A collective of developers, which includes Ty Taylor and Mario Castañeda, The Quantum Astrophysicists Guild is most famous for their much- adored monochrome 2D logic puzzler, The Bridge, which toys with concepts made famous by M.C. Escher, and plays with perspective and physics to delight the player.

Location: Various, U.S.

Founded: 2012

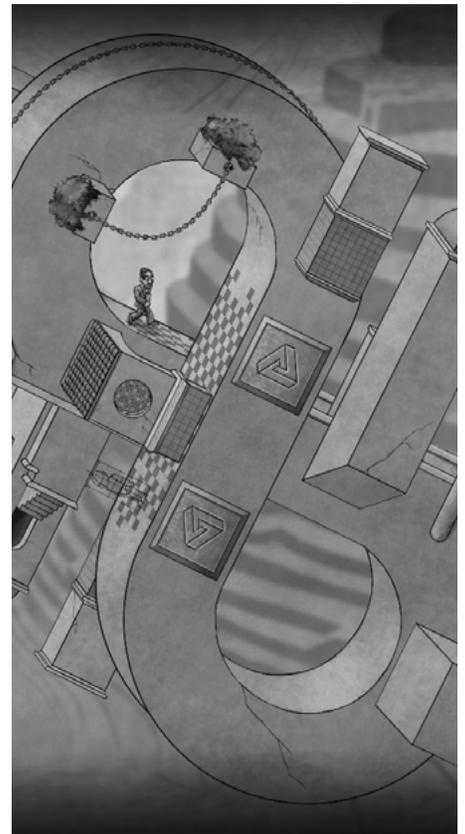
Custom engine games: The Bridge (original release)

Unity games: The Bridge (cross-platform ports), Tumblestone

Why they moved to Unity:

The studio’s ultimate goal was to release to basically every platform that Unity supports.

quantumastrophysics.com



Ramping up team productivity

Beyond improving time-to-market, adopting Unity can help increase team productivity too. For some studios with internal engines, a team of engineers was needed to update and maintain proprietary solutions.

Rather than spending time maintaining the engine, those studios are now using it to extend the engine in order to provide their teams with other services and devoting more time to the rest of the pipeline.

What's more, while Unity is readily extendable, the fact that the Asset Store offers a well-stocked library of professional standard additions to the engines can mean huge cost and time savings for teams.

Previously at Frima, the team's custom engines IceField and IceWave were in use, occupying the schedules of several engineers. "What we have done now is take some R&D engineers and have them build tooling around Unity, either migrating our existing modules into Unity, or helping the Unity workflow on



Fruit Ninja, Hibernum Créations

things like the build system,” says Frima’s CTO Luc Beaulieu. “Overall, from two years ago, we have a few less engineers in R&D, since using Unity.”

While Frima certainly isn’t alone in seeing a more efficient, cost effective studio model after adopting Unity, it does also enjoy a relatively distinct benefit. As a studio that predominantly produces high-end client work, Unity has helped them meet the needs of more potential clients, as increasing numbers request to use the engine.

STUDIO SPOTLIGHT

Hibernum Créations

Renowned as both a work-for-hire team and partner of highly regarded games studios, Hibernum has made a name for itself delivering quality developments to well known clients.

Location: Montréal, Canada

Founded: TBC

Custom engine games: TBC

Unity games: Trans-Galactic Tournament, Fruit Ninja Kinect 2, BruceLee iOS, Calling All Mixels, Disney Infinity, CupCake Carnival, Saber’s Edge, Globlins

Why they moved to Unity

After having a negative experience with Flash for their move to mobile, Firma moved to Unity and has since experienced impressive growth.

hibernum.com



Wrapping up

From a one-man team that hires occasional contract staff to those working at 9000-headcount game developers Unity is being adopted across the globe at some very different studios with a shared heritage of using custom technology.

Some are taking AAA IP to mobile without wanting to sacrifice quality, while others are pushing astounding indie games to so many platforms, it would have once been a pipe dream. All of them have found working the engine into their technology and teams an utterly workable process. The benefits range from ease of learning and porting projects to efficient rebuilding or reusing of code to fast iteration, multiplatform support and staffing company growth.

To see more great games that have used Unity, check out the [Made With Unity gallery](#). Or if you want to dive straight into it, [download Unity now](#) and use [these online resources](#) to help you get started. If you'd like to connect with someone with questions you've come away with after reading this paper, please reach out to Ryan Petersen at ryanp@unity3d.com.

Beyond that, simply visit Unity3D.com, where you can find everything you need to know about the Unity engine and services, connect with Unity experts, check out upcoming events, and engage with the Unity community.

Checklist: why leave custom?

An at-a-glance guide to some of the reasons successful studios moved away from custom engines, and a look at some of the benefits Unity offers as an alternative to custom tech.

Why move beyond custom?

- A desire to make games, not maintain tools
- A move to embrace mobile after a heritage in PC and console
- Existing custom technology primarily aimed at specific platform has lost relevance
- A need to match the expectations of players and clients
- The desire to take AAA IP and quality to mobile
- Need support for new technologies and platforms
- A need to set up an agile, creative team within a large studio

"Now that we moved our production pipeline to Unity, the focus can be more on gameplay and fun factor than making tools." **Mario Lefebvre, Studio Tech Director, Hibernum Creations**

"One aspect of a game engine that is very important for our studio is the collection of platforms supported. As a game company, we need to reach as many players as possible."
Martin Ruel, Technical Director, Square Enix Montréal

"XNA was only working on Windows and Xbox 360 when we made The Bridge, so we released to those two platforms right away, but to get to almost anywhere else we had to go to somewhere else." **Ty Taylor, Developer and Co-Founder, Quantum Astrophysicists Guild**

"We wanted cross-platform play. In this day and age it is so important to get your game onto as many platforms as possible." **James Vaughan, CEO and Founder, Ndemis**

"The motivation to move away from our custom technology [...] was really about challenging some of the perceptions about big game development." **Peter Young, Producer, Reflections**

"We needed to deliver Assassin's Creed on mobile in the triple-A quality players were used to."
Achim Moller, Technical Director, Ubisoft Blue Byte

Why adopt Unity?

- Easier to recruit and train staff
- Advanced animation capabilities essential to a game's mechanics
- You need artist-friendly tools for animation and cinematic content
- Easy to publish to a broad range of platforms
- The support of an experienced provider and a proactive community
- Looking for an engine that offers a platform that complements studio growth
- Time-to-market is crucial (rapid prototyping, ready-to-use assets and other efficiency features)
- A variety of subscription options
- A royalty-free licensing model
- Live updates with the latest technology and features
- Make artist/developer collaboration more productive
- Gain the ability to tailor content to your audience based on live data-driven insights

"The main reason that we chose Unity was that the engine has a very powerful animation system."

Christian Schell, Senior Lead Programmer on Assassin's Creed Identity, Ubisoft Blue Byte

"Unity absolutely ticks the cross-platform boxes in a way that our own custom engine just never could." **James Vaughan, CEO and Founder, Ndemis**

"There's the formal support channels and direct contact with Unity, but also all the other developers that are using Unity and sharing their experiences."

Peter Young, Producer, Reflections

"It's well done and easy to use, so that simplified our growth as a studio."

Mario Lefebvre, Studio Tech Director, Hibernum Creations

"Unity helped us to get to market very fast. With Unity, we've been able to focus most our effort on gameplay." **Martin Ruel, Technical Director, Square Enix Montréal**

"One of the things that really made Unity a great solution for us is that we really like to iterate here at Blizzard." **Jason Chayes, Production Director, Hearthstone: Heroes of Warcraft's, Blizzard Entertainment**

Top Unity adoption tips

Developers from across the world share their tips on getting the most from adopting Unity and integrating it into your studio.

Hiring

"Invest in a cache server. Get enterprise support as a warranty that you'll be able to ship on time. And remember, hire one or more Unity experts. Seriously."

Jean-Philippe Doiron, Director of Technology, Frima Studio

Maximizing performance

"On the subject of porting a game from another engine to Unity, it might seem tempting to reuse as much of the code as possible, but at the cost of poor performance it's not always worth it to do that rather than to just recreate the game using Unity paradigms to maximize the performance of the game with Unity."

Ty Taylor, Developer and Co-Founder, Quantum Astrophysicists Guild

Extending the engine

"Unity will do a lot for you by default and on most fronts you will just use the engine and the tool as they come. But there might be that specific feature in your game that is not standard and that might be what sets your game apart. Here you want to try and benchmark as early as possible to know if you can do it cleverly using Unity or if you need to build something specific. And an important point; before you decide that you need to build a specific subsystem, check the Asset Store. There are good chances that it already exists."

Renaud Charpentier, Lead Designer, Creative Assembly

Evaluating prior to project start

"To evaluate Unity we ported small bits of an older game. It was really useful. I was quickly able to build something where I could move around and begin to climb. That let me know we would be able to achieve a real Assassin's Creed game on mobile."

Christian Schell, Senior Lead Programmer on Assassin's Creed Identity, Ubisoft Blue Byte



 unity