5 MAJOR PITFALLS THAT COULD SABOTAGE YOUR MOBILE GAME

How to avoid mistakes that can keep you from achieving your development and launch goals

Unity®

INTRODUCTION

This year saw the PC and console market shrink by 2.1%. Meanwhile, the mobile games market continues to explode, with estimates showing it will increase nearly 10% by 2027.

In our *2023 Unity Gaming Report*, we found that studios took more games to the small screen last year, with large studios seeing a 44% increase in mobile-only production. Advances in smartphone hardware mean studios can provide higher-quality experiences that come closer to matching their console counterparts. And the market is acclimating to shorter gameplay loops and monetization through advertising and in-app purchases.

So how can you make sure you don't miss out on this highly lucrative opportunity? Game developers often ask us questions like: How do we know what platform we should focus on? How can we avoid development roadblocks? How do we ensure a successful, on-time launch?

To help answer these critical questions, a group of Unity veterans combined to address the five top mistakes every developer and studio should avoid. Based on industry best practices and Unity's over 15 years of leadership in the mobile game-development industry, this e-book will help you avoid the pitfalls associated with:

1. Improper planning

2. Not targeting the right platform

3. Wasting internal resources and using difficult workflows

4. Inadequate profiling

5. Overengineering

→ MISTAKE 1

IMPROPER PLANNING

A game will only be as successful as the disciplined work and insight you put into planning. Here are the major factors that prevent proper planning:

Lack of detail: Many studios do not properly scope timelines, resources, and deliverables. There may be nothing particularly glorious about staring at a spreadsheet, but some things simply have to be calculated and documented ahead of time.

Ignoring financial realities: It's common for creators to get caught up in the dream, overlooking the importance of a timely return on investment (ROI). Chasing artistic perfection to the exclusion of business objectives is usually a costly mistake.

Missing the big picture: It's too easy to get distracted by some early innovative tech or cool aspect of the project. A prototype may be a stunning creation, but unless you plan for all its supporting elements, no one will end up playing it (or investing in it).

→ It's critical to keep the big picture in mind, guided by a detailed plan.

→HOW TO AVOID IT

GIVE YOUR PLANS A BACKBONE BY PROTOTYPING BEFORE YOU GROW YOUR TEAM.

The key to successful planning is doing all the considerable prep work, researching, and calculating, and then being prepared to possibly abandon it all as you adapt to unexpected opportunities and challenges. What gets a creative game developer through this paradox? How do you maintain a passionate impulse when you have to grind away at numbers and then watch that work blow away like dust in the wind?

Prototyping

Your original idea for a character or gameplay is what sparked your passion for a project, and you can keep that spark alive to sustain you through the less entertaining aspects of day-to-day development. Prototyping lets you make the fun in your game tangible and gives you and your team a solid reference point on which to base your development decisions. You'll want to iterate any prototype early and often to create a unique experience for players that will ultimately help your game stand out. From a planning standpoint, it's essential to also allow plenty of time and effort for transitioning a prototype to the official game development framework.

Don't grow your team too quickly

Plan to add headcount as you actually need it, not while you're early in the prototyping phase. You don't need to spend loads of time and money growing your team when you're still tinkering with the foundational "fun." Once you've found that fun and developed a good prototype, you can focus on growing your team to build out the art, code, and levels.

→ MISTAKE 2

NOT TARGETING THE RIGHT PLATFORM

If you're going to put all your work and resources into creating a successful game, you must think ahead about which platform(s) you're building for. A lower-end device with a small screen, less power, but wider distribution? A high-end model with high frame rates and advanced textures?

All platforms have their advantages and disadvantages for different types of games and genres and, for that matter, different types of developers.

→ Prioritize the best platform(s) to showcase your game.

→ HOW TO AVOID IT

REMEMBER THAT A PLATFORM IS MORE THAN JUST AN OS.

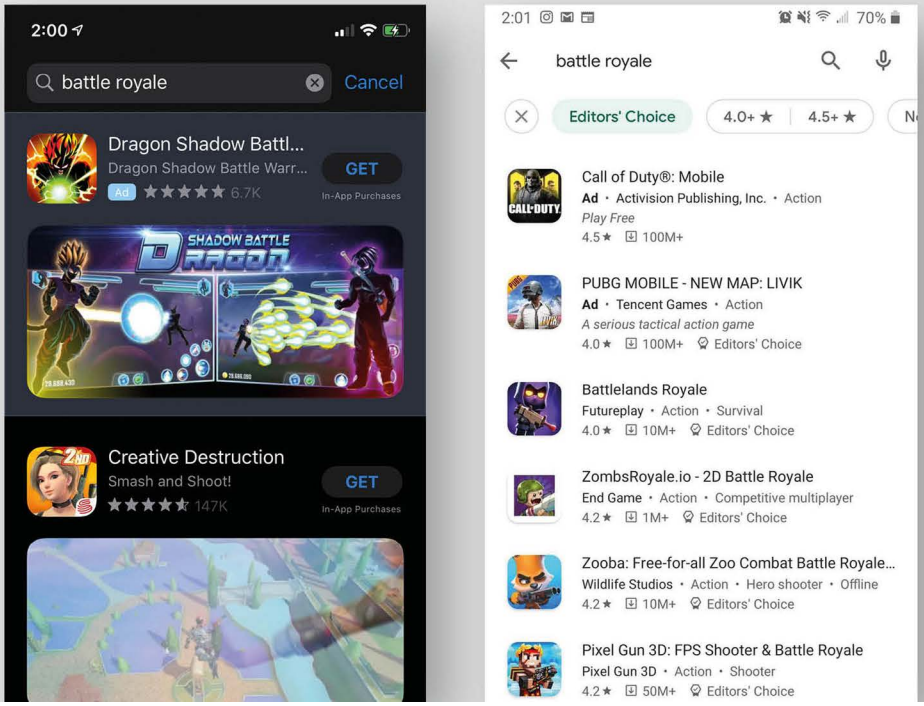
Targeting the right platform – or even targeting all platforms – requires carefully considering several factors. How do the particular characteristics of your game match up with potential models? What kind of competitive issues will you face? Are you ready to build relationships that can be invaluable to gaining a foothold in your target market?

Restraints

Many development decisions hinge on platform hardware restraints, their operating systems, and their minimum-specification (minspec) capabilities. Here are a few important points to keep in mind:

- Mobile devices are getting increasingly powerful, but device fragmentation issues and the management of different mobile OSs and models can be substantial.
- Whatever your target platform, it's wise to always develop for the minspec device – the oldest, least-powerful version of whatever's still in wide distribution. That device's bottlenecks will show up early in profiling and testing.
- What's hot now may cool off by the time you're able to launch. Anticipating trends is hard, but doing some research can help narrow your target.

→ Not all devices are created equal. Profile and test on the least-powerful target early.



→ Study where the market's going, and consider aligning with a major industry player.

Competition

It may feel like you're throwing yourself to the wolves when you look at the number of studios that seem to have games similar to yours. Just keep in mind that they all started where you did and they all probably felt the same way. You'll have an edge if you can consider:

- A platform may be growing rapidly, but you have to balance growing numbers with the potential for the intense competition that a hot device may attract.
- It may take multiple months or years to complete your game, so you need to try to predict the future. Study trends and try to figure out which platform will be most popular or best suited to your game when it actually launches.
- Your game genre is probably more popular on some platforms than others. Target a platform that has wide distribution but may host less competition for games like yours.

Relationships

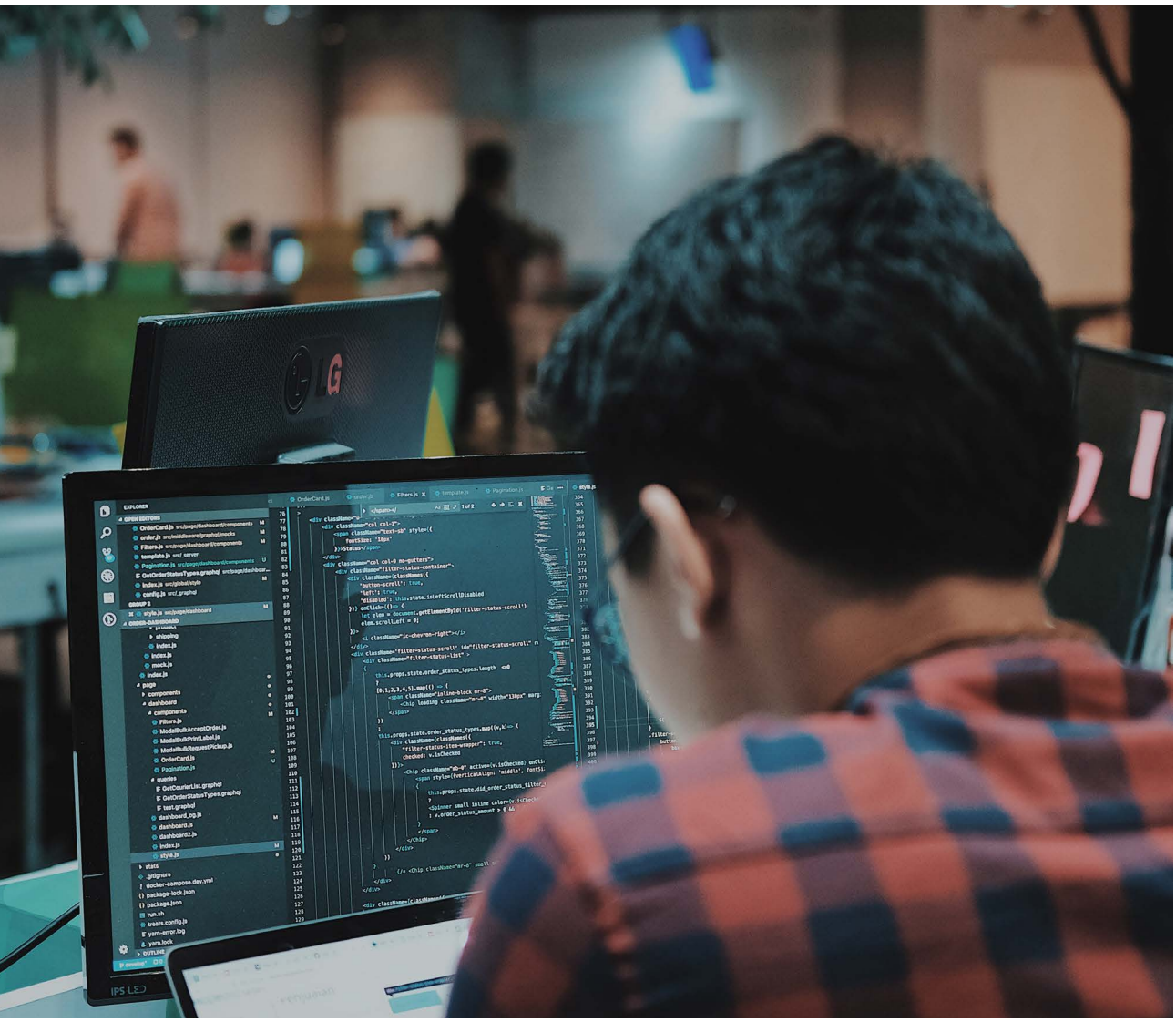
Like it or not, success often depends on who you know. Manufacturers and big publishers staff entire organizations and teams that, if you pique their interest, will guide you technically and beyond to come up with a game that will make their platform or device look good.

Apple, Google, Nintendo, Microsoft, and Sony all compete to be a developer's best friend by offering everything from dev kits to comarketing subsidies. If you do the research and reach out appropriately, chances are at least some will have a featured spot for a game in your genre. And remember that your personality and that of your team may dictate who you'll get along with best – while all are driven by hard numbers, some are more inspired by indie art, some by proven, formulaic builds, and so on.

→ MISTAKE 3

WASTING INTERNAL RESOURCES AND USING DIFFICULT WORKFLOWS

Spinning your wheels on problems that have already been solved can ruin your balance sheet and demoralize your teams. You're going to eventually run into software roadblocks, and you may not have the resources in-house to cope with them. Plus, neglecting the day-to-day workflows for your developers and artists is a constant drain on their value that creates a massive lost-opportunity cost.



→ Keep your developers happy with simple workflows.

→ HOW TO AVOID IT

OUTSOURCE WHERE APPROPRIATE AND MAKE LIFE EASIER FOR CONTENT CREATORS.

Occasionally, game development can be much harder than expected and can eat up disturbing amounts of time – even more so as you get closer to your planned launch dates. You can avoid a lot of anxiety (and costs) by taking advantage of external resources and streamlining your internal workflows.

Online resources

Several sites such as GitHub and the Unity Asset Store let independent content creators and coders post useful development content. This can range from full-featured tools that solve high-level coding issues to asset packages that enable quickly adding game environments and other features you may want. While convenient, there can be additional costs to using these resources.

For example, when pulling these packages off the web, be mindful of exactly what you're adding to your project. Typically, these kinds of packages include a lot of content that won't be used, whether it's a code routine or a graphic asset.

After you know what you want, it's important to carefully profile the game and delete the things you're not going to use. Otherwise, irrelevant routines may run in the background or unused animations may load, slowing down other processes. These packages can be quite robust and solve many issues, but you may only need one or two features.

Workflows

Optimizing workflows for content creators should be a top priority. The value of designers, artists, and animators increases proportionally with the number of iterations they make and how fast they can add them to your game code.

It's crucially important to make their day-to-day experience of adding content – their workflows – as easy as possible technically. It will dramatically speed up design processes and development and minimize delays.

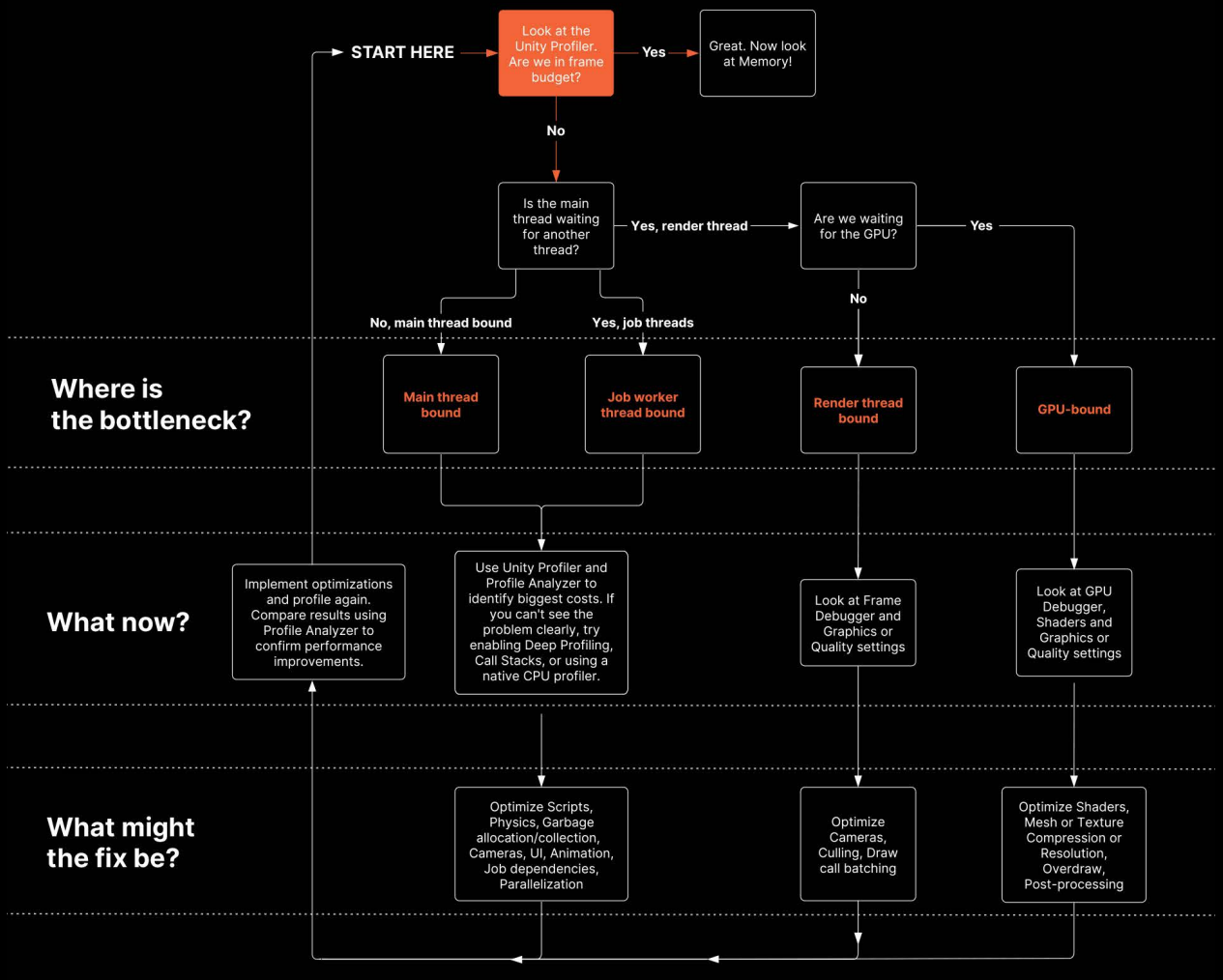
Polygon – Fantasy Kingdom by Synty Studios, from the Unity Asset Store

→ MISTAKE 4

INADEQUATE PROFILING

Not knowing exactly how your code is performing (or misperforming) on your target platform(s) will, somewhere along the line, create immense frustration when you eventually learn you've got a problem. Any launch schedule will be cast adrift, and if you're already guilty of Mistake #2 (not targeting the right platform), you'll be adrift in very deep water.

Follow this flowchart and use the Profiler to help pinpoint where to focus your optimization efforts:



→ Profile early and often.

→ HOW TO AVOID IT

PROFILE EARLY AND OFTEN.

To optimize your mobile game's performance on any platform and overcome mobile device fragmentation, profiling is a must. It shows you how the CPU, memory, renderer, and audio components are all getting along, helping you catch performance bottlenecks early in the development process. If you profile correctly and often, you'll be able to spend more time improving features and the game experience. Test with the right devices – and test every day.

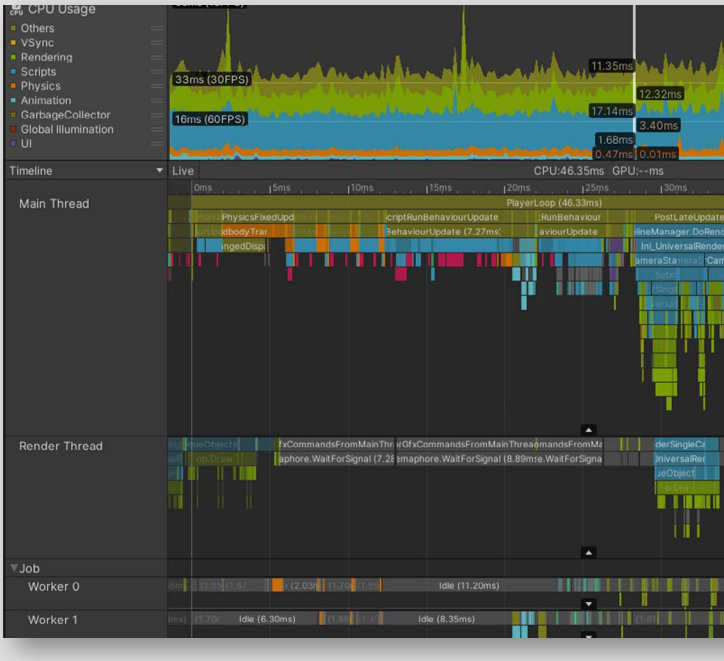
Minspec devices

There is a huge array of device manufacturers, chip sets, and features, and each device has different performance characteristics and capabilities. For any given platform, profile with the oldest, least-powerful version that is still likely to run your game in significant numbers. Get a number of devices so developers, QA, and anyone involved can easily profile often.

It's also important to use not only your game engine's profiler but also whatever vendor profiler is available for your target platform(s). You'll see exactly what the device is doing with the memory you think you're using. For mobile devices, you'll want to use your engine profiler as well as Android Profiler in Android Studio 5.0 and higher, or Xcode and Instruments for iOS

Iterative testing

Every day of development typically means new or newly tweaked code and assets. If you don't profile for weeks, you'll have no idea what caused a change or issue. If you're doing it on a daily basis, you can quickly identify exactly which additions are causing an issue. Ideally, every engineer profiles what they're working on every day to check for scripting spikes and overall level quality.

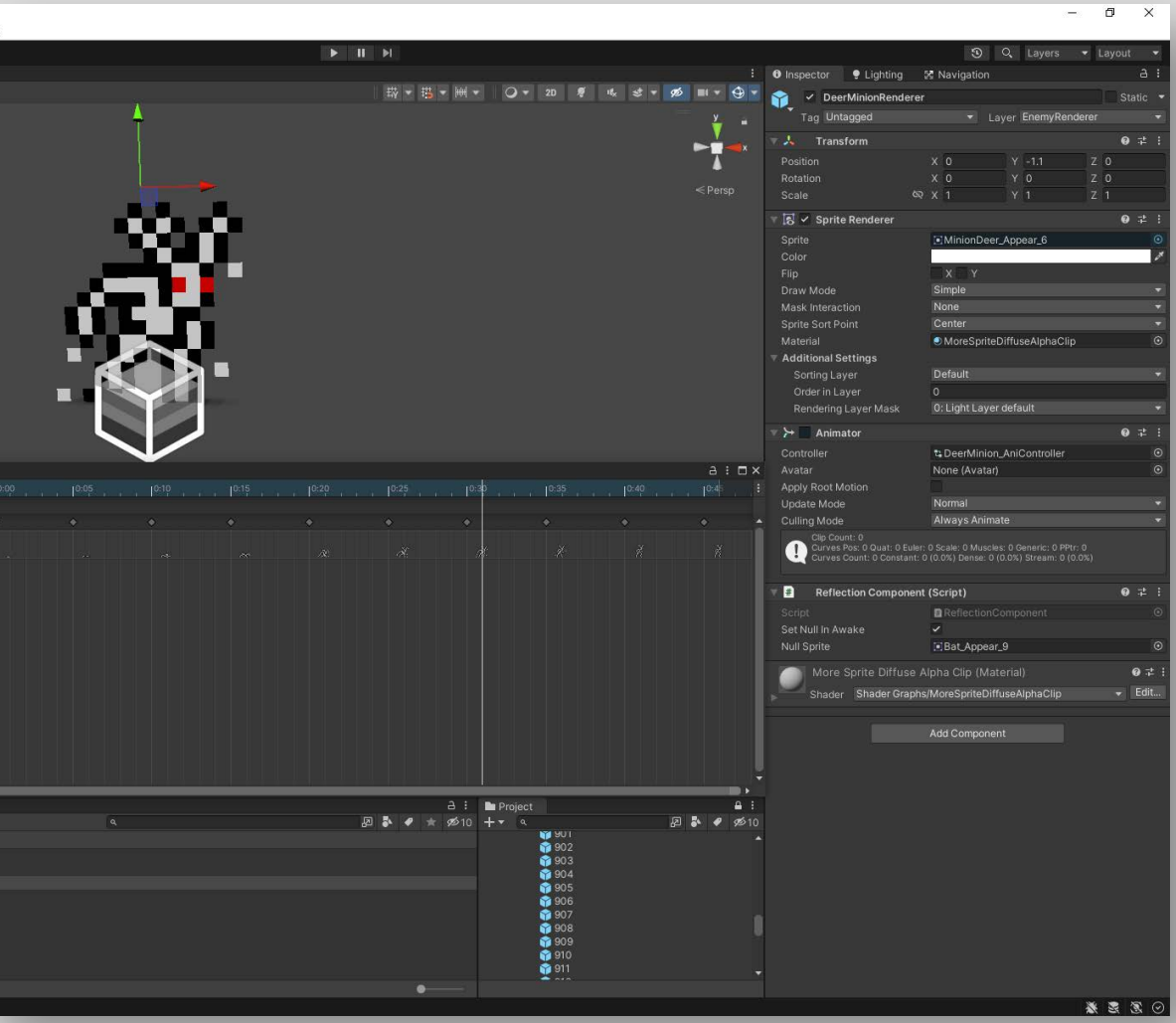


→ Test frequently, and across a wide range of devices.

→ MISTAKE 5

OVERENGINEERING

Feature creep or engineering for problems that your game doesn't have diminishes the flexibility of your code and development processes, and it's often counter-productive. If a close look at your code shows functions that have little practical impact other than calling other functions and your work is increasingly making things more complex instead of simpler, you may be overengineering.



→ Don't let feature creep sneak into your project.

Bleak Sword by more8bit

→ HOW TO AVOID IT

KEEP IT SIMPLE.

The opportunity window for a hot game only opens for a brief time, and shortening the development cycle and getting the game to market faster can make all the difference. So build the game you've scoped out and planned for, not every future variation you can imagine. There's a difference between leaving room for possible future features and building nearly finished, not-quite-baked components.

Small, simple, and specific

If you overengineer your system/code base, then as your teams scale up not everyone will be able to follow the complicated code base you've created. Keep the architecture as small, simple, and specific as possible so a new coder will be able to keep up. As with all software development, comment your code extensively and make your comments practical and helpful. And, when the code changes, change the comments, too.

There's a maintenance and performance cost to all code, so if it's no longer needed, delete it. A challenge is that if your code is thickly intertwined, pruning won't be easy, and you may be stuck with unnecessary code that's slowing your game down.

Don't cut corners.

Sometimes, convenience is the enemy of performance. As engineers, we want the computer to do as much of the work for us as possible, but that's no reason to forgo elegance. C# includes many attractive, powerful functions that will get a job done. However, unless you know the full extent of what those functions are actually doing, you may be extending load or response times with unnecessary logic. Convenience is often a wrapper for complex processes, so unless you fully understand what that logic is doing, it shouldn't be in your game.

→ WRAP-UP

CREATE YOUR BEST GAME AND LAUNCH IT ON TIME

Now that you recognize the top five pitfalls of game development, you can focus on the following five maxims that will improve your team's productivity and lead to greater success in the extremely competitive gaming marketplace.

1. Give your plans a backbone by prototyping before you grow your team.

Prototyping lets you make the fun in your game tangible, and you'll want to iterate any prototype early and often. Plan to add headcount as you actually need it, not while you're early in the prototyping phase.

2. Remember that a platform is more than just an OS.

Many development decisions hinge on platform hardware constraints, operating systems, and minimum-specification capabilities. Manufacturers and big publishers staff entire organizations to help you create a game that makes their platform look good.

3. Outsource where appropriate and make life easier for content creators.

Popular game engines make their engineering resources available, ranging from simple support calls to white-glove services. Optimizing workflows for your content creators should be a top priority.

4. Profile early and often.

To optimize your game's performance on any platform and overcome mobile device fragmentation, profiling is a must. Test with the right devices – and test every day. If you don't profile for weeks, you'll have no idea what caused a change or issue.

5. Keep it simple.

Build the game you've scoped out and planned for, not every future variation you can imagine. There's a difference between leaving room for possible future features and building nearly finished, not-quite-baked components.

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