

Please note: The content of this PDF is accurate as of March 2020.



# Roadmap 2020

## Core engine & Creator tools

Will Goldstone, Product Management



# Overview. Reliability & performance. Cre

- Reliability & performance
- Creative workflows
- Scalable quality
- Reaching your audience



# Overview. Reliability & performance. Cre

## About this presentation



### Released

What we've done in the past year or so, and why.



### Prerelease

What is available right now in Prerelease (beta or alpha) or as a Preview package.



### In Development

What we are working on right now that will be arriving in the 2020 series and beyond.



# W. **Reliability & performance.** Creative work

**Our first guiding principle is to ensure that Unity is a reliable and highly performant platform for your creative and business goals.**



# W. **Reliability & performance.** Creative work

**Building a reliable platform for you**

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**The Mission**

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**Delivering a stable and robust Unity.**



# W. **Reliability & performance.** Creative work

## Building a reliable platform for you

### Past

### Present

### Future

Three releases per year, with the final release becoming your long term supported (LTS) version.

Packages shipped in Preview very early resulting in unpredictable quality and unclear roadmap.

Unity was in tech transition, the focus of engineering on new technology (e.g. SRPs, DOTs, UIElements, etc.)

**2019.1****2019.2****2019.3****2019.4****L T S****2019**





# W. Reliability & performance. Creative work

## Building a reliable platform for you

Past

Present

Future

Now at two releases for 2020, with the final (second) release becoming your LTS version. Two releases means a longer stabilization phase (alpha, beta) resulting in a more robust and stable release.

Number of publicly available Preview packages are reduced. We are transitioning to a new definition of Preview. Experimental items will be kept to focus groups. Always users first, making sure you can succeed with the Unity of today. Focus on core product quality.

2020.1	2020.2	2020.3
		L T S





# W. Reliability & performance. Creative work

## Building a reliable platform for you

Past

Present

Future

- Keep up twice-yearly cadence.
- Work with you our community on a new lifecycle for packages with much more clarity and predictability.
- Focus is balanced between current technology and the future.

2021.1

2021.2

2021.3  
L T S





# W. **Reliability & performance.** Creative work

## Production orientation

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### The Mission

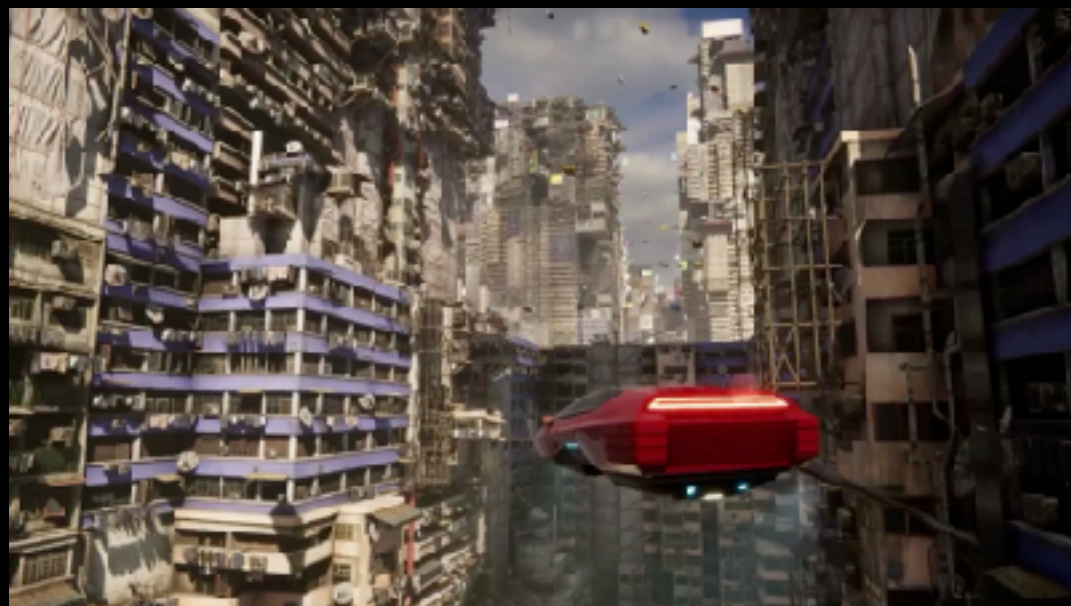
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**To validate new technology against our own productions, ensuring production readiness for you.**

# W. **Reliability & performance.** Creative work

## Production orientation

### Released



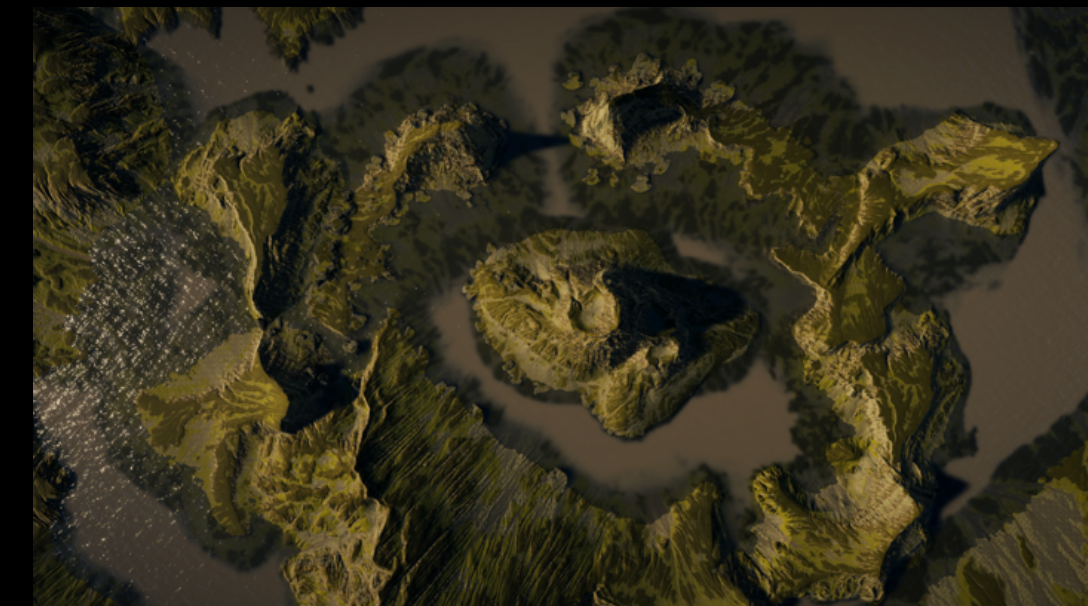
We began with FPS Sample Game and Megacity, as a means of pushing our ability to network and scale.

### Prerelease



Our current Prerelease focus is our DOTS sample—a third-person networked game showcasing our NetCode and many of our new DOTS-powered features such as Unity Physics.

### In Development



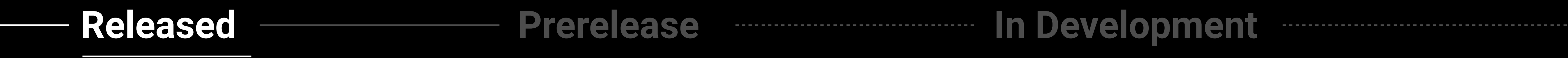
Another major focus is a large open-world shooter which is being developed alongside our new Environment system and many of our DOTS-powered features.



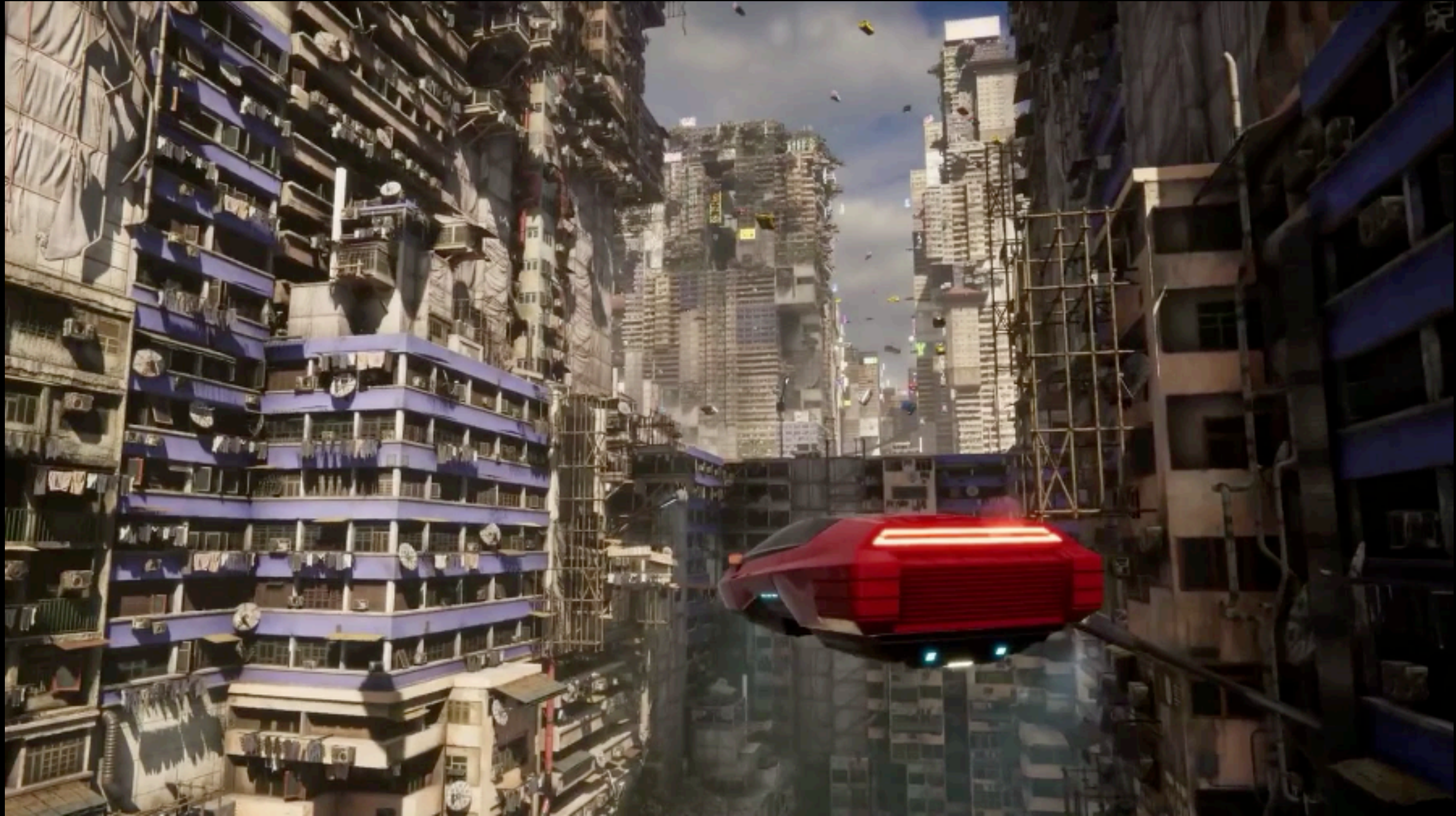


# W. Reliability & performance. Creative work

## Production orientation



We began with FPS Sample Game and Megacity, as a means of pushing our ability to author and render worlds at massive scale.





# W. **Reliability & performance.** Creative work

## Production orientation

Released

Prerelease

In Development

Our current Prerelease focus is our DOTS sample - a third-person networked game.

This was a proving ground for our new DOTS NetCode, Animation and Unity Physics systems to ensure they worked harmoniously.





# W. **Reliability & performance.** Creative work

## Production orientation

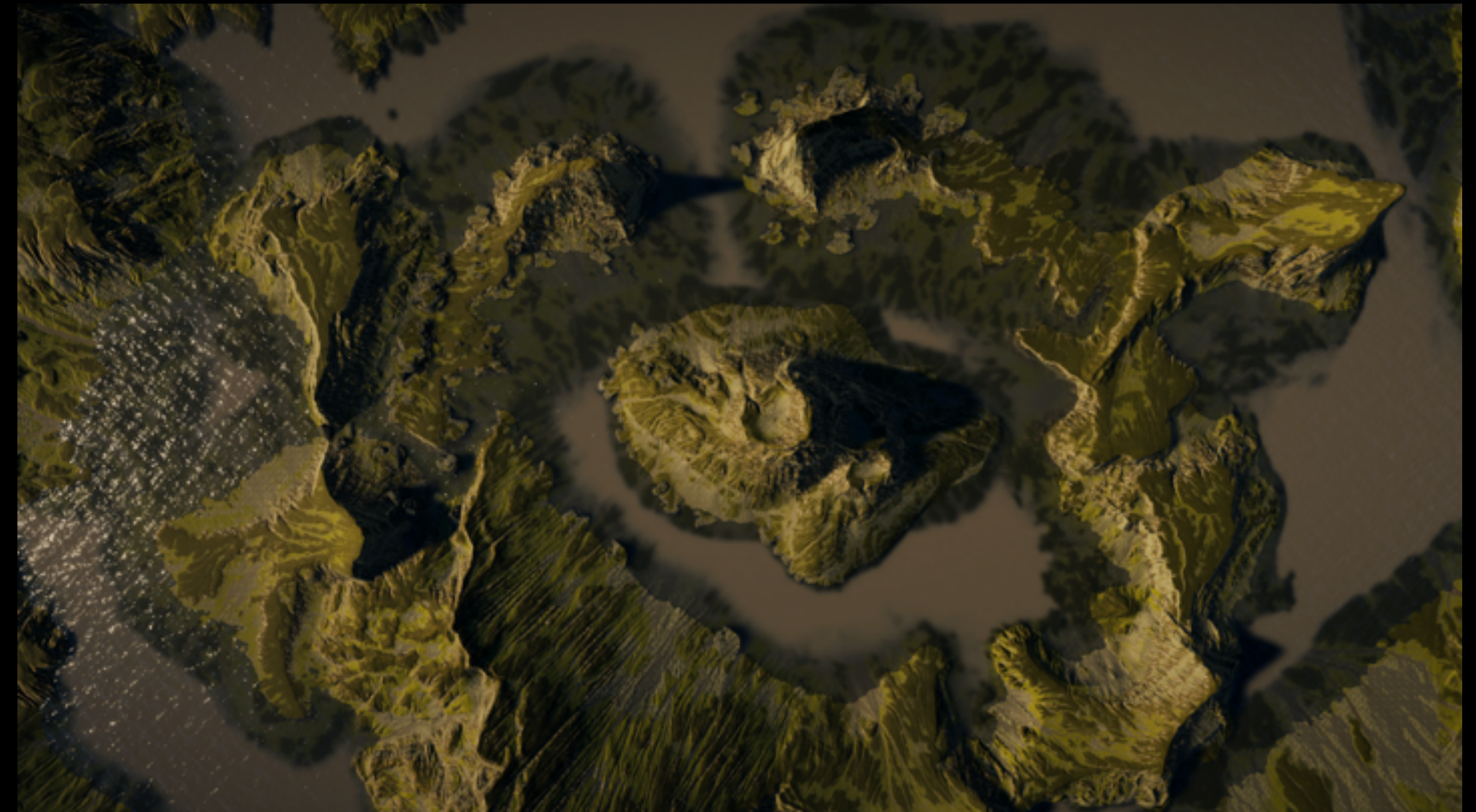
Released

Prerelease

In Development

Our current focus is on a large open-world shooter that combines our new Environment system and many of our DOTS-powered features that we proved in our DOTS Sample project.

In this project, the focus will be on performance at scale, streaming and iterating on large Scenes, networking and working with our DOTS systems for Animation and Physics.

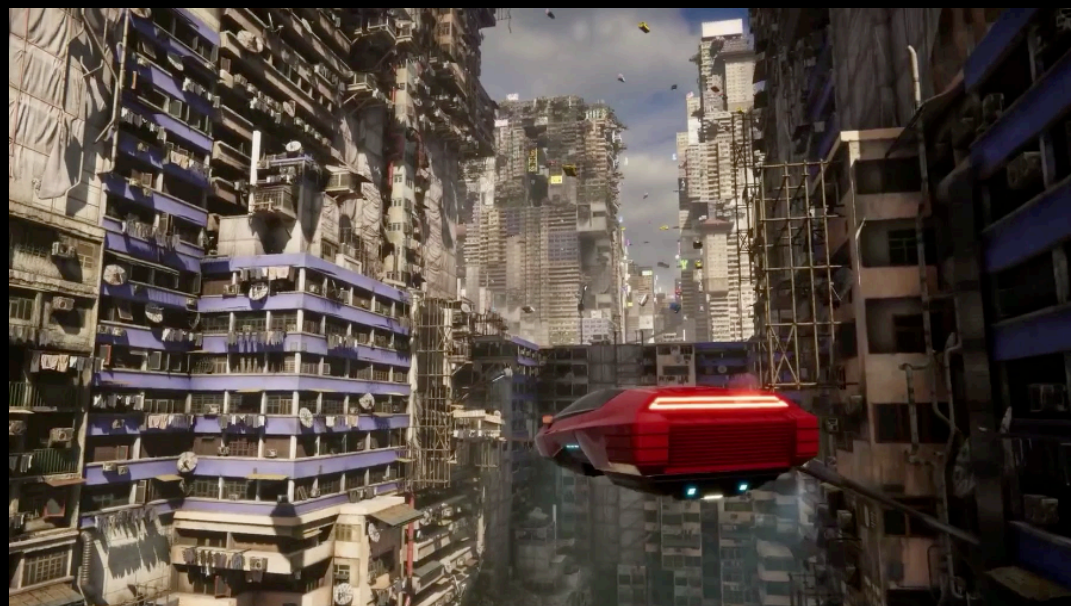




# W. Reliability & performance. Creative work

## Production orientation - highlights

### Released



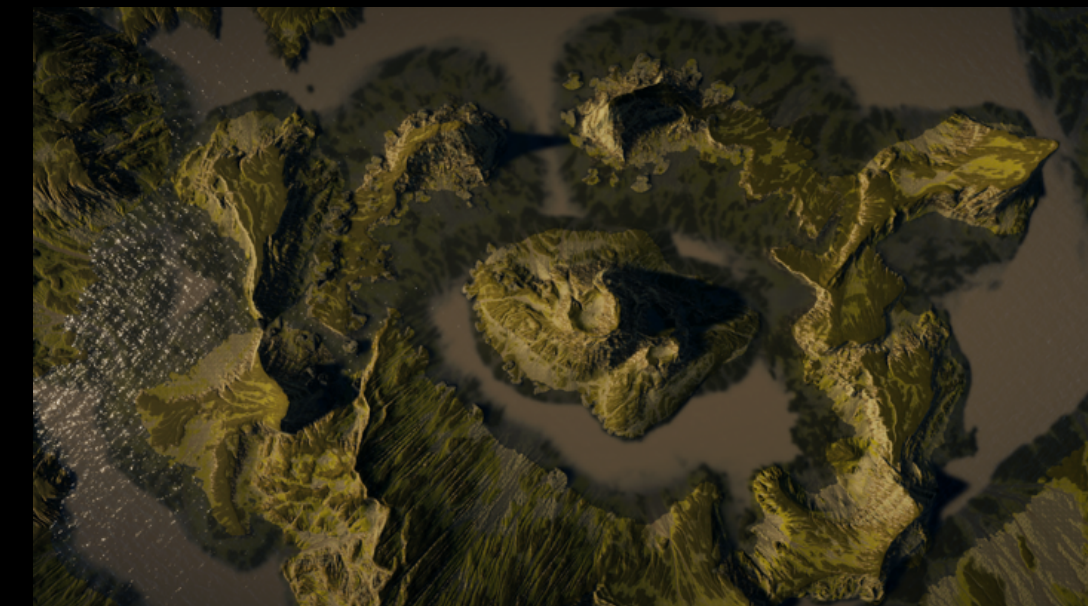
- FPS Sample
  - HDRP
  - NetCode
- Megacity demo
  - Hybrid renderer
  - Sub-Scene workflows

### Prerelease



- DOTS Sample
  - Unity Physics
  - Animation low-level
  - NetCode (DOTS)
  - Live Link

### In Development



- Large open-world shooter (pre-production)
  - Streaming
  - Networking
  - Iterating on large Scenes
  - New Environment system
  - Animation & Unity Physics tooling

# W. **Reliability & performance.** Creative work

## Packages and you

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### The Mission

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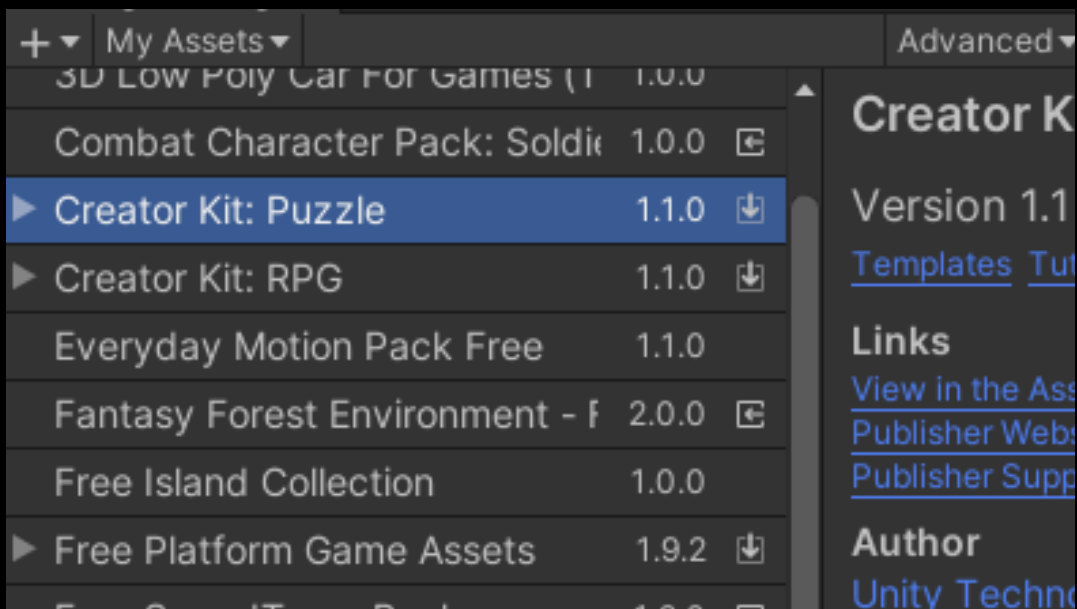
**Discover new solutions and manage updates with greater ease. Extend and customize projects for your target workflows and platforms.**



# W. Reliability & performance. Creative work

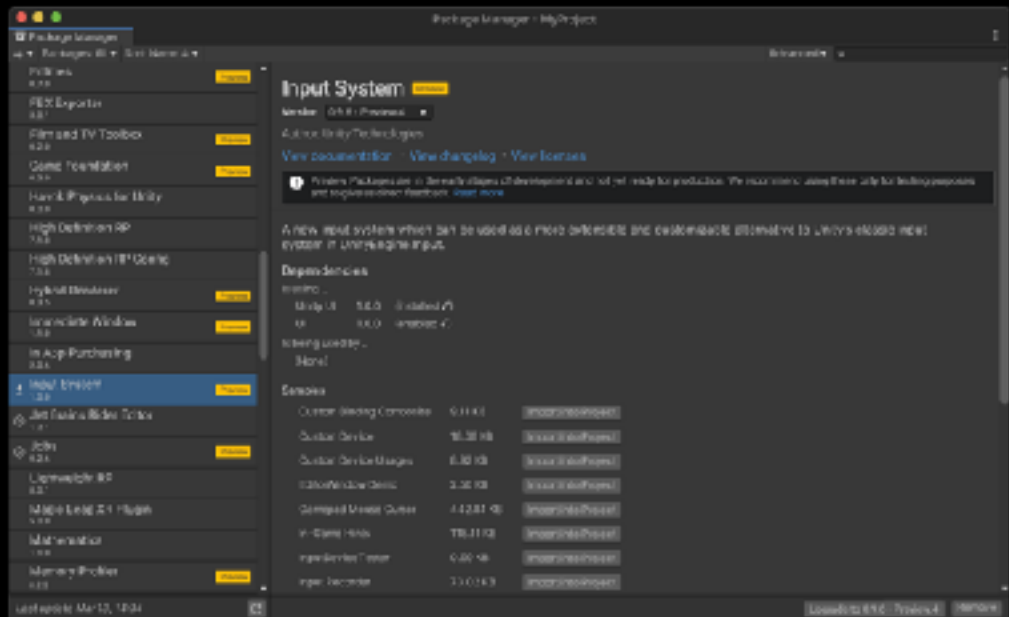
## Packages and you

Released



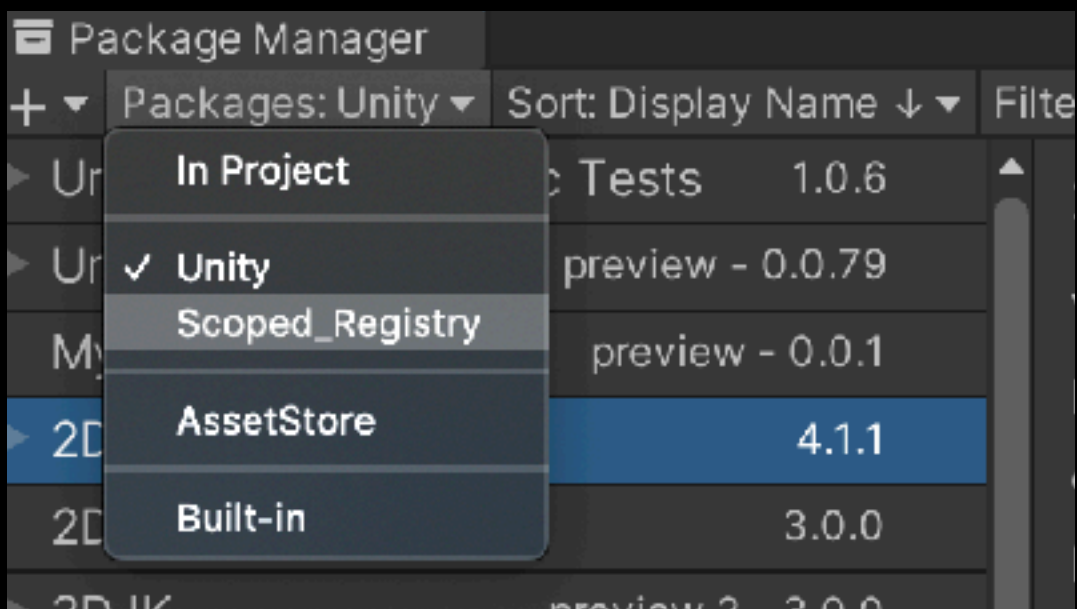
Unified in-Editor package management experience with native Asset Store “My Assets” support

Prerelease



Greater performance and browsing capabilities for the “My Assets” in-Editor experience  
Extended support for custom package workflows

In Development



Improved discoverability browsing the large set of Unity-hosted packages and advanced controls when installing/disabling packages and their dependencies

# W. Reliability & performance. Creative work

## Packages and you

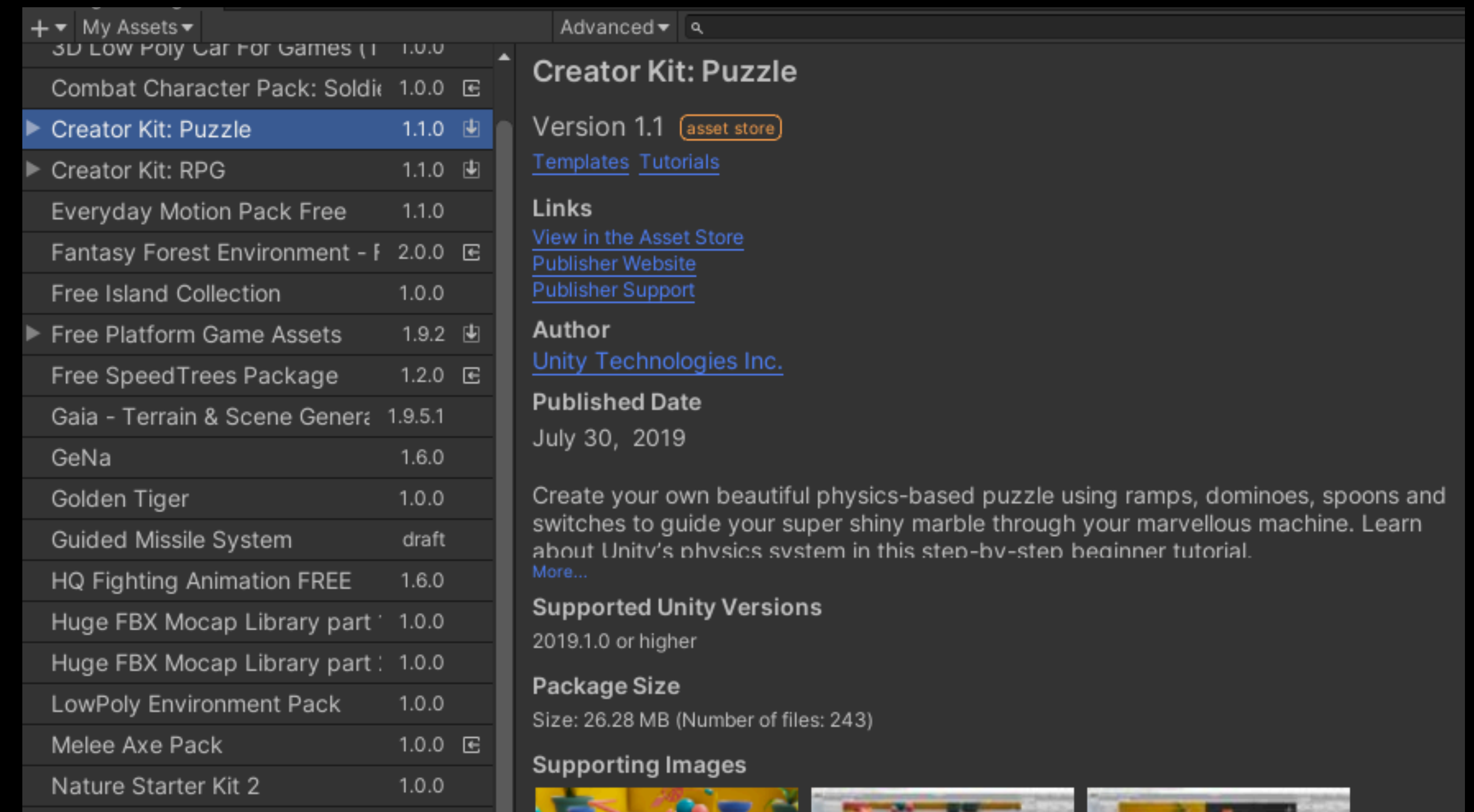
### Released

### Prerelease

### In Development

Our first phase in a unified in-Editor package management experience with native Asset Store “My Assets” support. Manage all of your Asset Store purchases directly in the Package Manager UI.

Download and import Asset directly in your project and check for updates directly in the Package Manager “My Assets” search filter.







# Reliability & performance.

## Packages and you

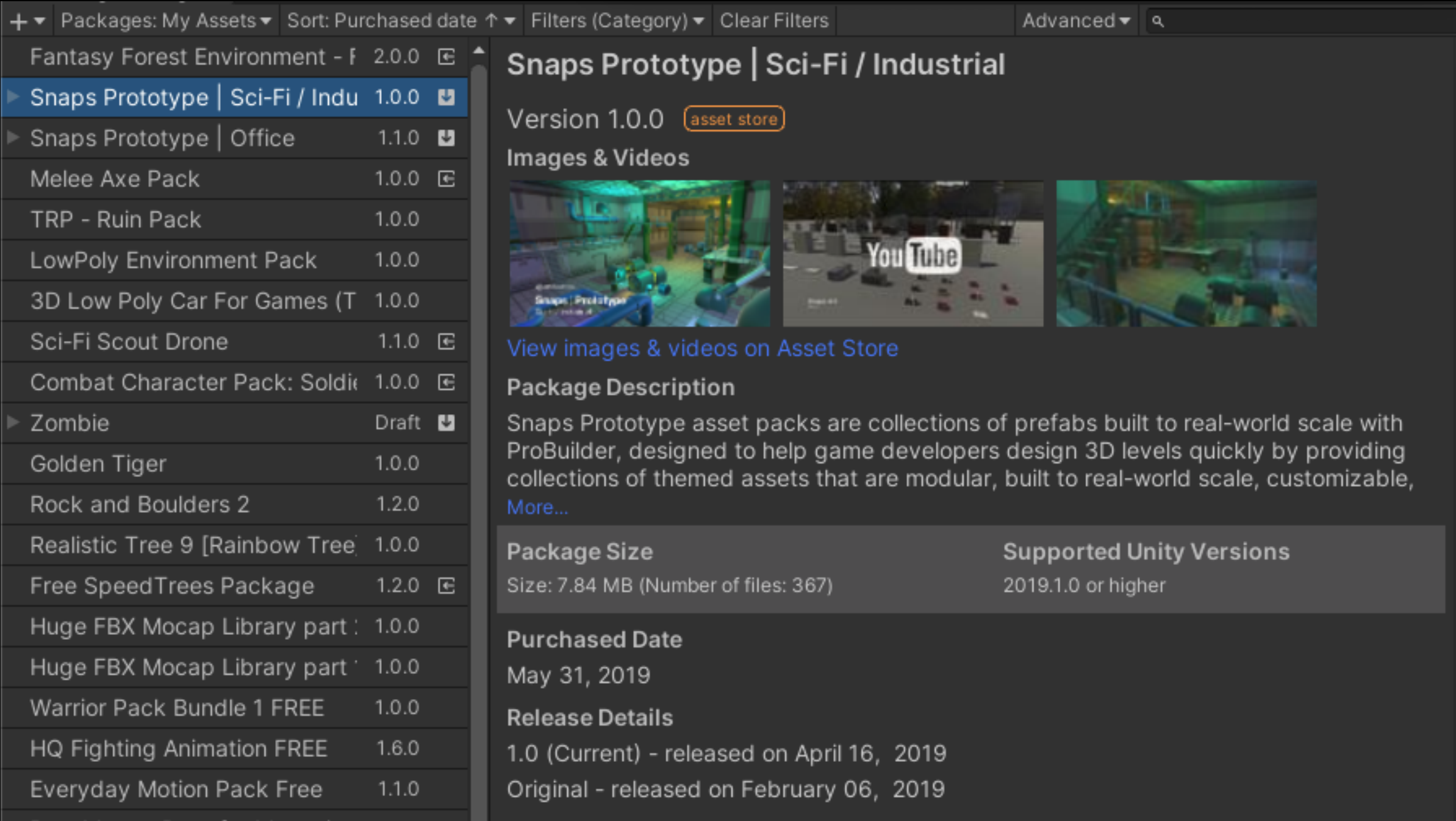
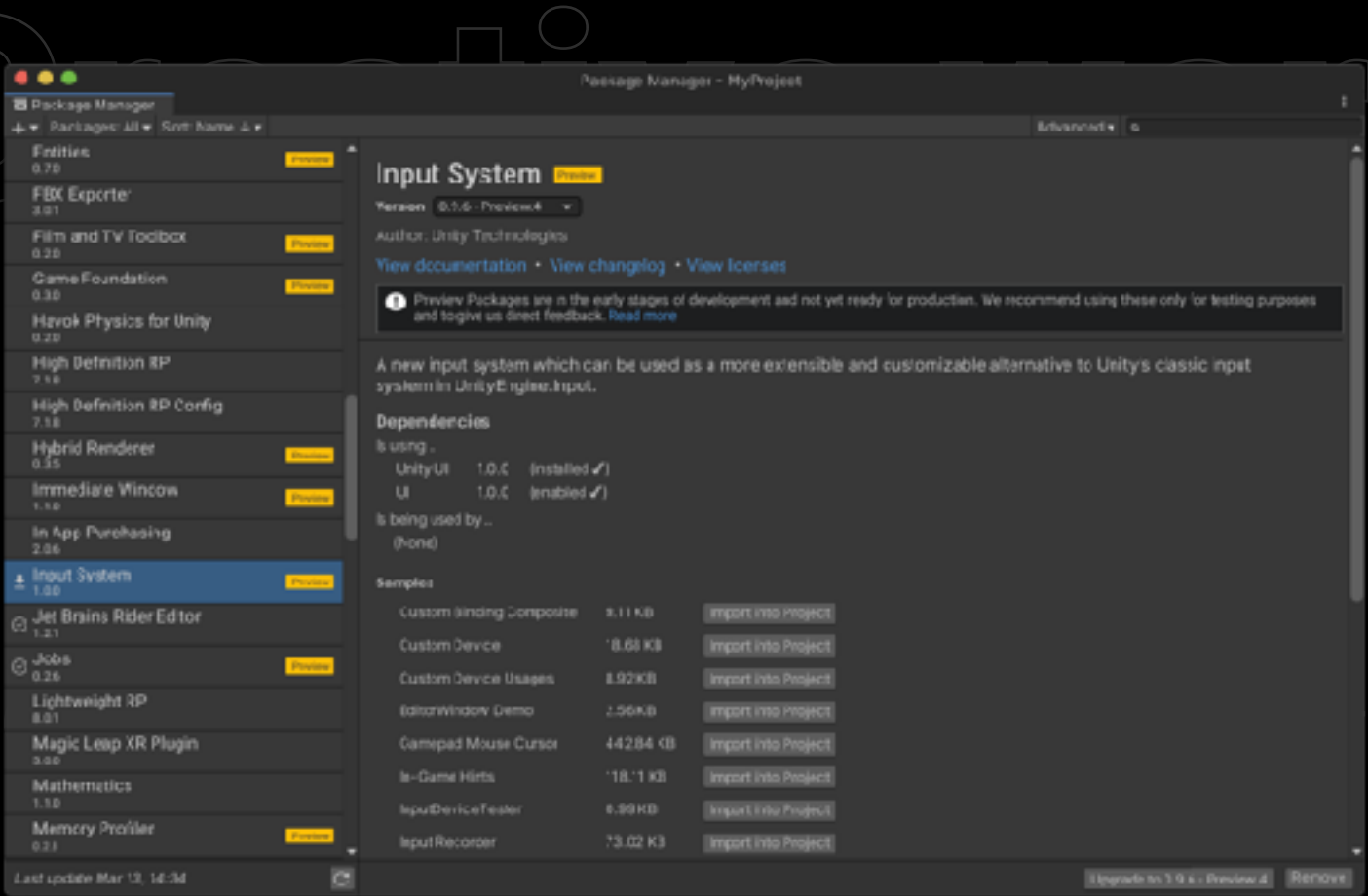
Released

Prerelease

In Dev

We’ve improved the native in-Editor Asset Store “My Assets” integration with faster package search/listing performance and enhanced the user experience with new sorting & filtering options.

In parallel, we’ve also extended the abilities to install custom packages in your project with authentication support for your npm scoped registries and Git packages in repository sub-folders.





# W. Reliability & performance. Creative work

## Packages and you

Released

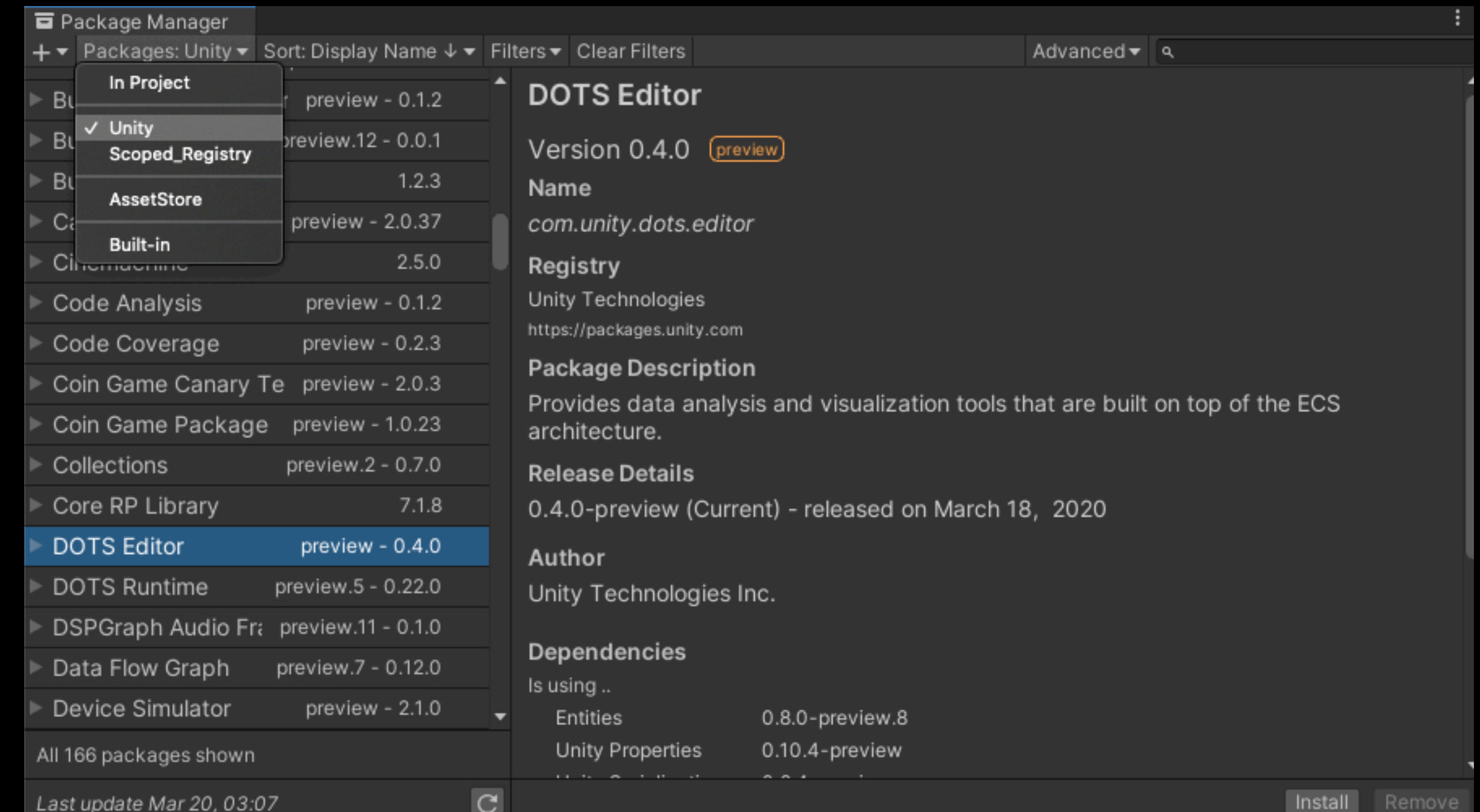
Prerelease

In Development

As we continue to modularize Unity, we are investing in better user experience to support the large scale of packages available while also providing greater clarity on their current development state.

Support for new search filters, groups, bulk install/uninstall, and categories will make it easier to discover the right solutions.

We are also implementing a new dependency resolution solver to address conflicts during updates.

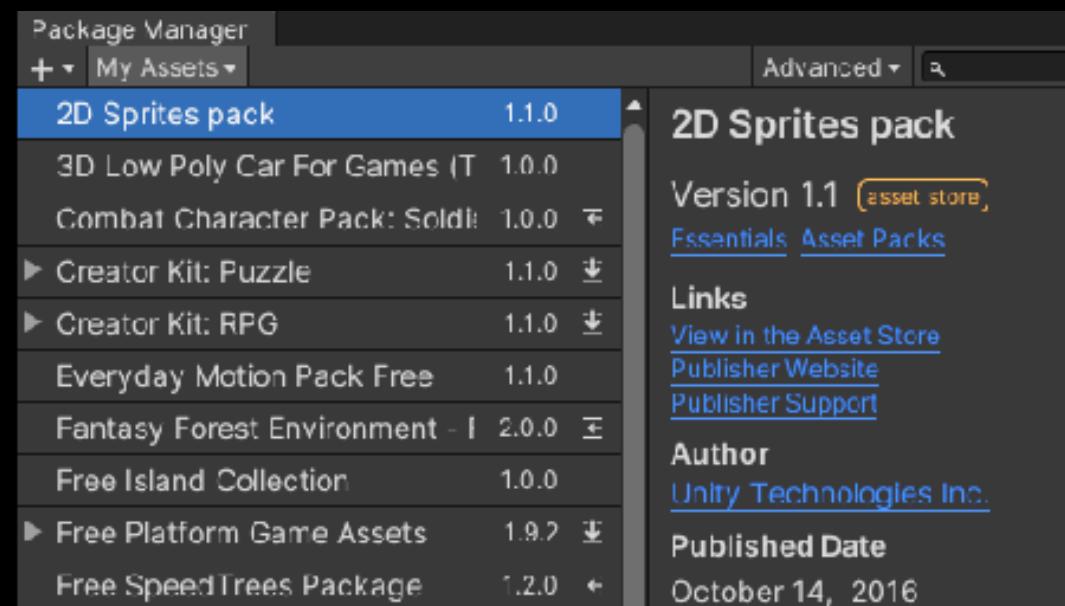




# W. Reliability & performance. Creative work

## Packages and you - highlights

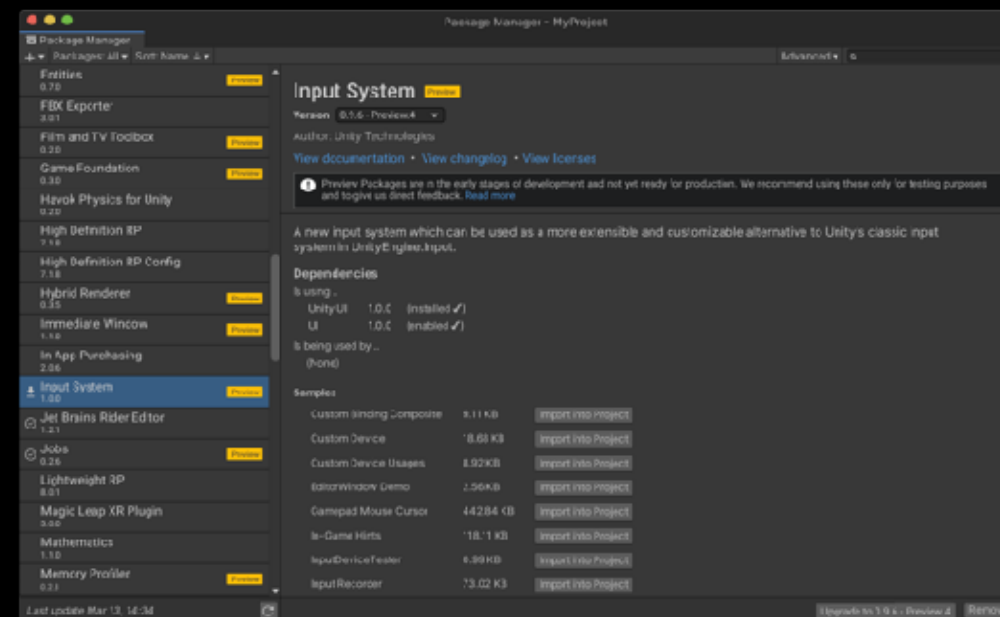
### Released



#### ■ 'My Assets'

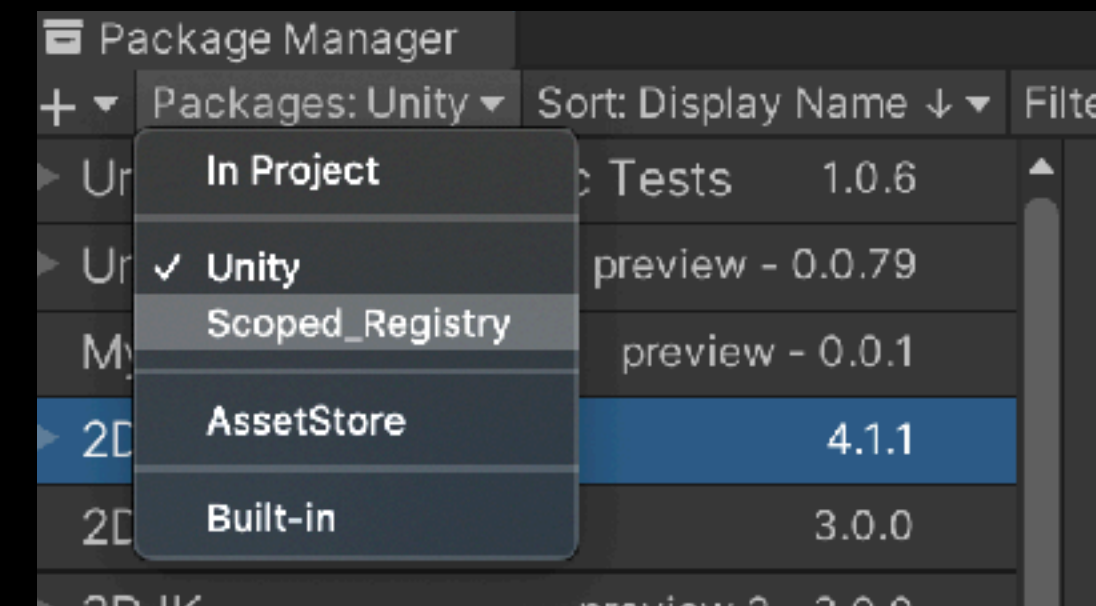
- Native Asset Store Editor integration
- Download/import/update purchased

### Prerelease



- Improved "My Assets" performance and browsing UX
- Scoped registry authentication
- Install Git packages from repository sub-folders

### In Development



- Unity package registry support for groups filters and categories
- Bulk install/uninstall of multiple packages
- SAT solver-based package dependency resolution



# W. **Reliability & performance.** Creative work

## Profiling and performance optimisation

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### The Mission

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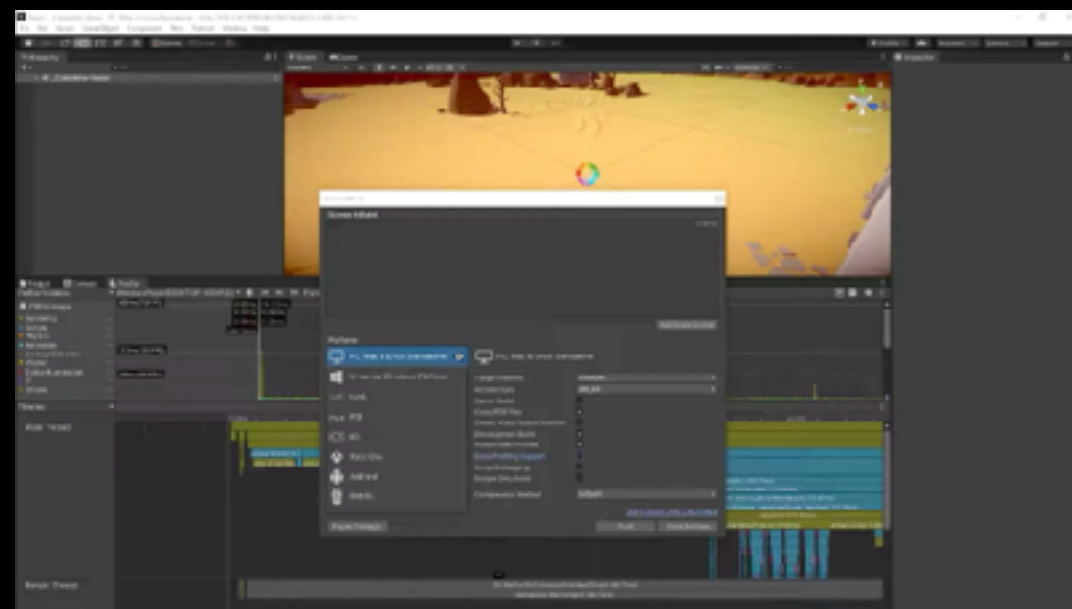
**To help you get the maximum performance by offering insightful views and control of your performance and memory data**



# W. Reliability & performance. Creative work

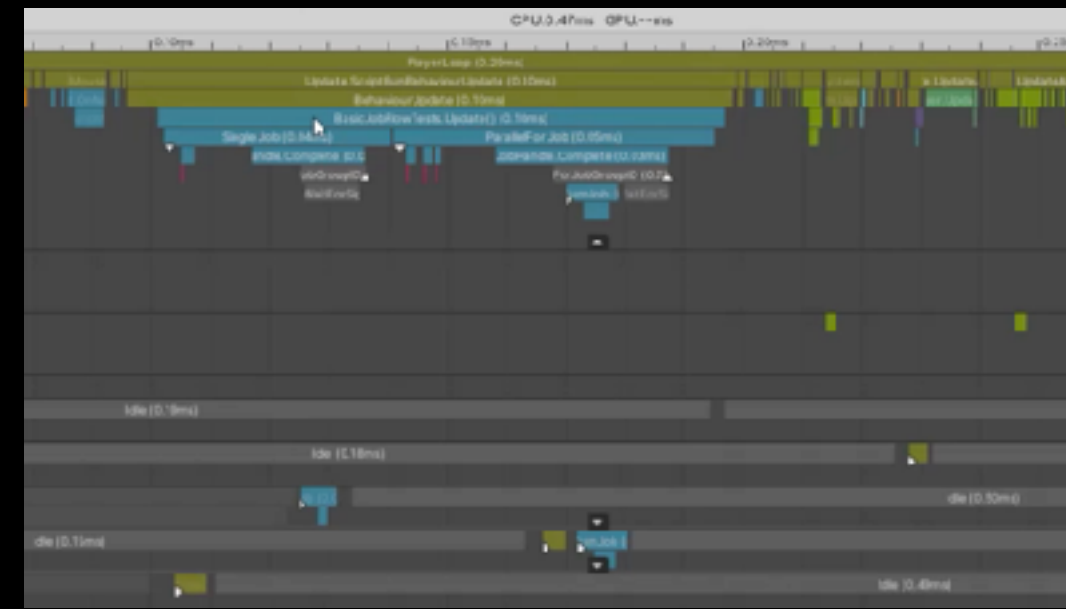
## Profiling and performance optimisation

Released



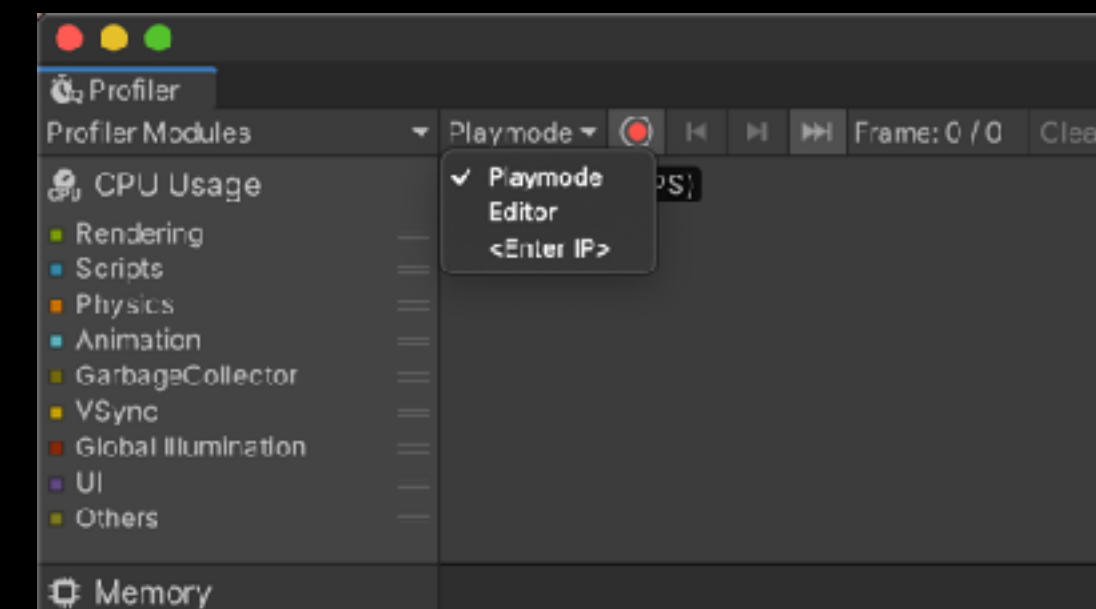
Unity's profiling tools have been improving steadily with a focus on stability, performance and quality of life.

Prerelease



Stability and performance are still in focus, while we're making the profile data more customizable and reducing profiling overhead.

In Development



Stability and performance continue to be in focus, as we're making the profile data much more flexible and accessible – also through API at runtime.



# W. Reliability & performance. Creative work

## Profiling and performance optimisation

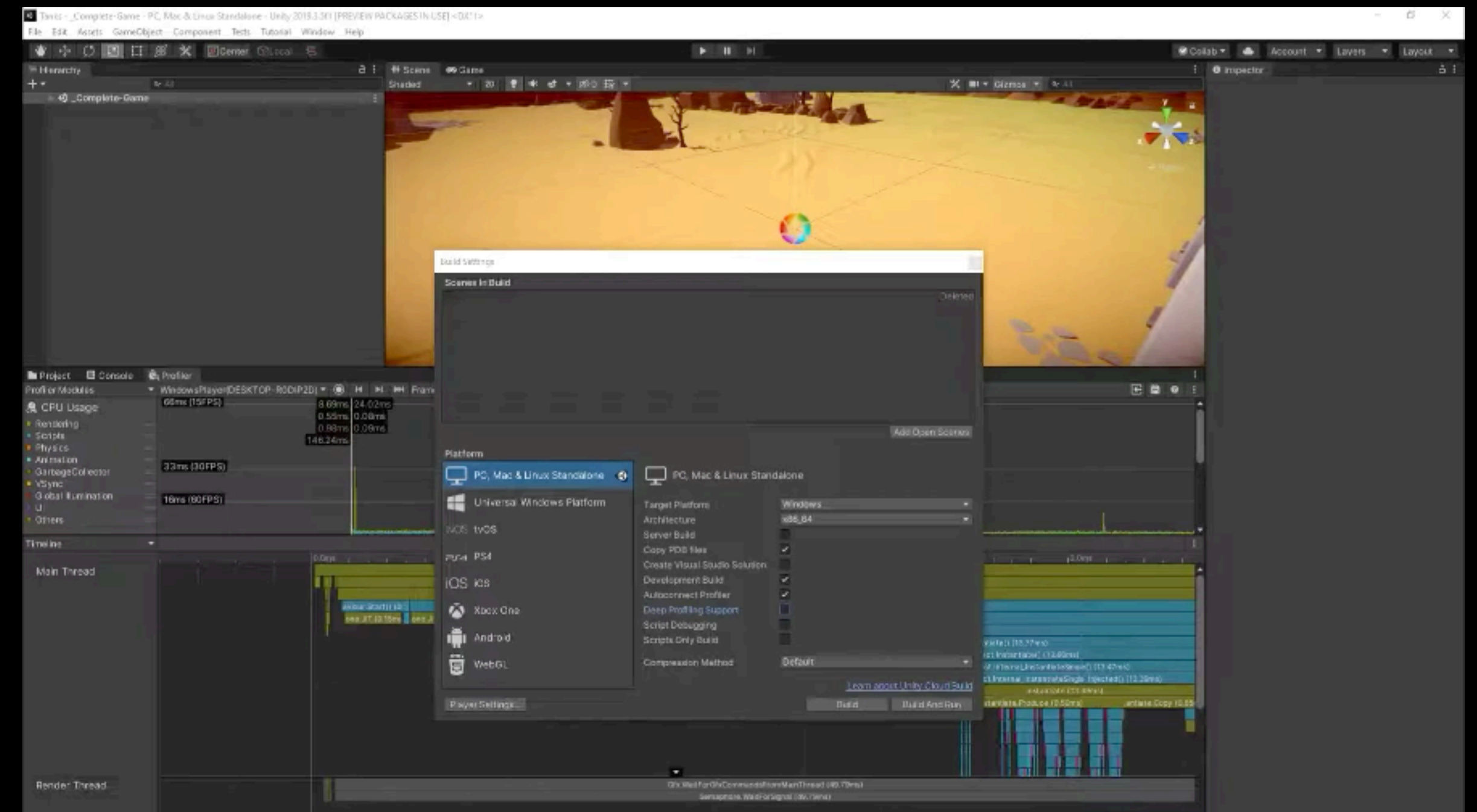
Released

Prerelease

In Development

Over the past year, we've invested more in our profiling tools than ever before, which is a key piece in our Performance by Default strategy.

We already have a comprehensive suite of performance tooling, so for a while now our focus has been to make sure that tooling is solid in terms of stability and performance.



# W. Reliability & performance. Creative work

## Profiling and performance optimisation

Released

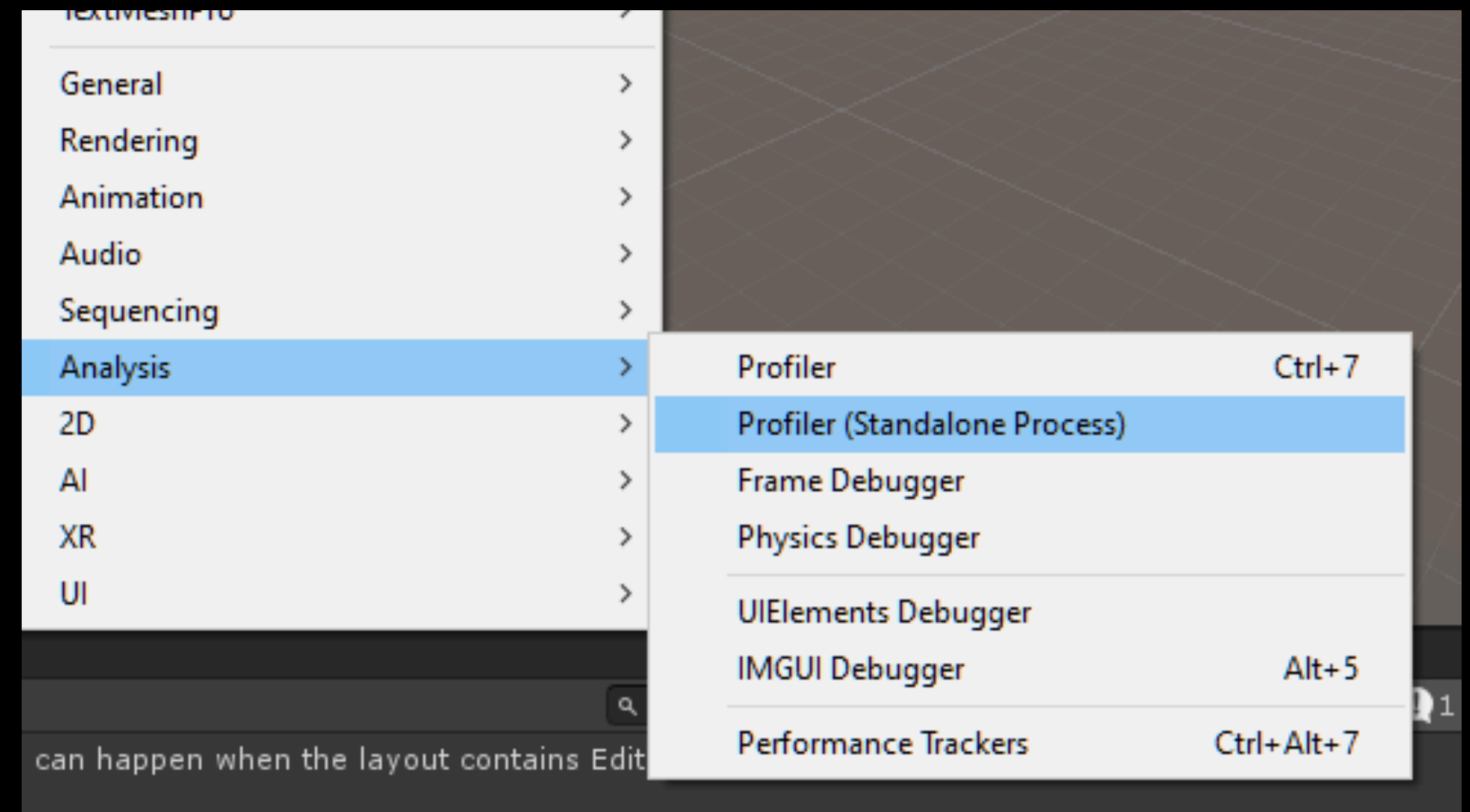
Prerelease

In Development

1 of 2

Stability and performance continue to be our focus with our updates to the Memory Profiler. With its most recent updates we have significantly cut down on capture and opening times as well as capture memory overhead, making it much faster and more stable to use.

We've also significantly reduced the performance overhead of profiling by making the Profiler window optionally run in a separate process from the rest of the Editor.





# W. Reliability & performance. Creative work

## Profiling and performance optimisation

Released

Prerelease

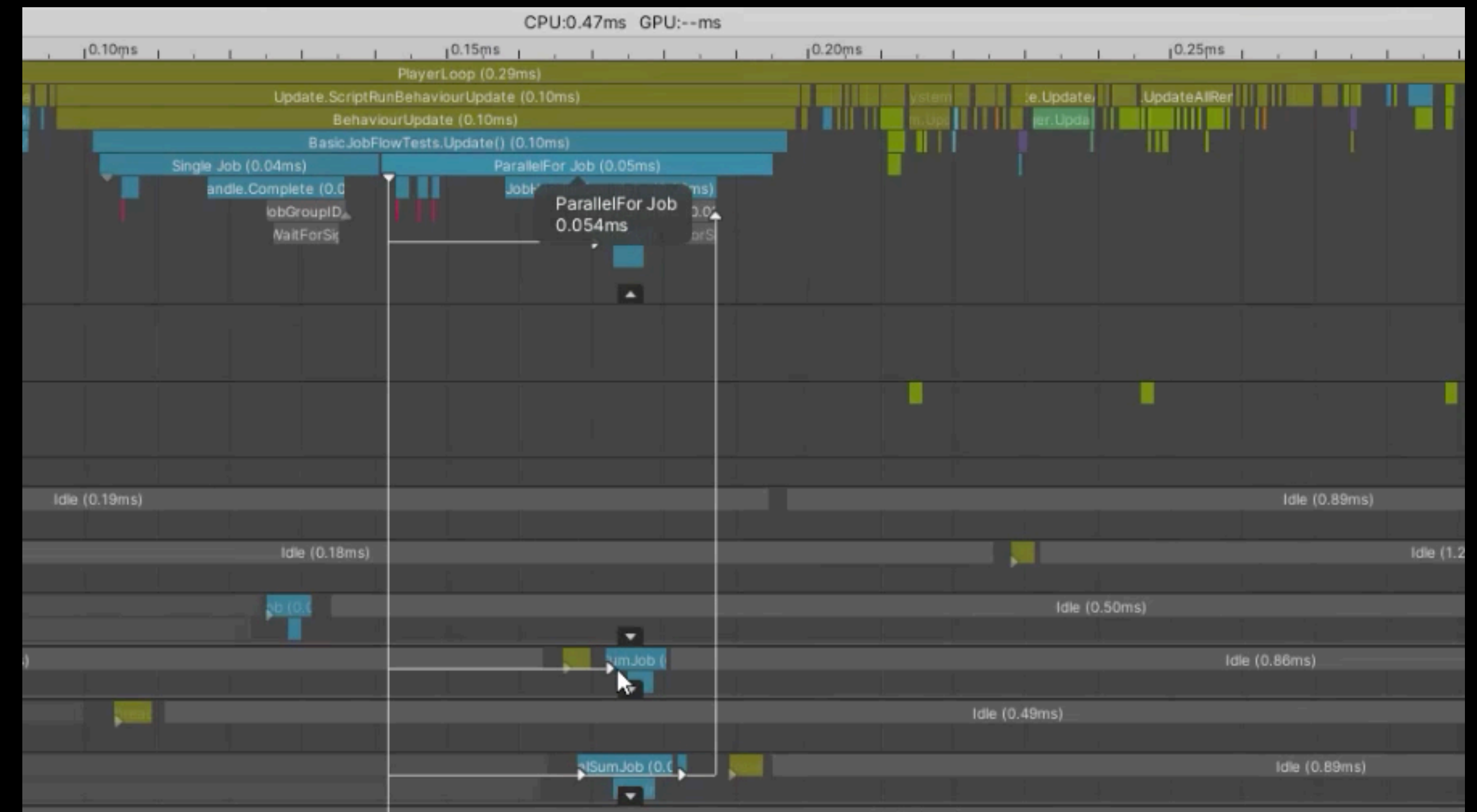
In Development

2 of 2

With 2020.1 you can also add metadata to your profile markers, giving you more control and context of your profile data.

If you're working with the Job System, from 2020.1 you'll be able to see what's going on with your job execution through the new flow event visualization in the Profiler window.

We have also completed a major documentation overhaul for absolute clarity on profiling your projects.



# W. Reliability & performance. Creative work

## Profiling and performance optimisation

Released

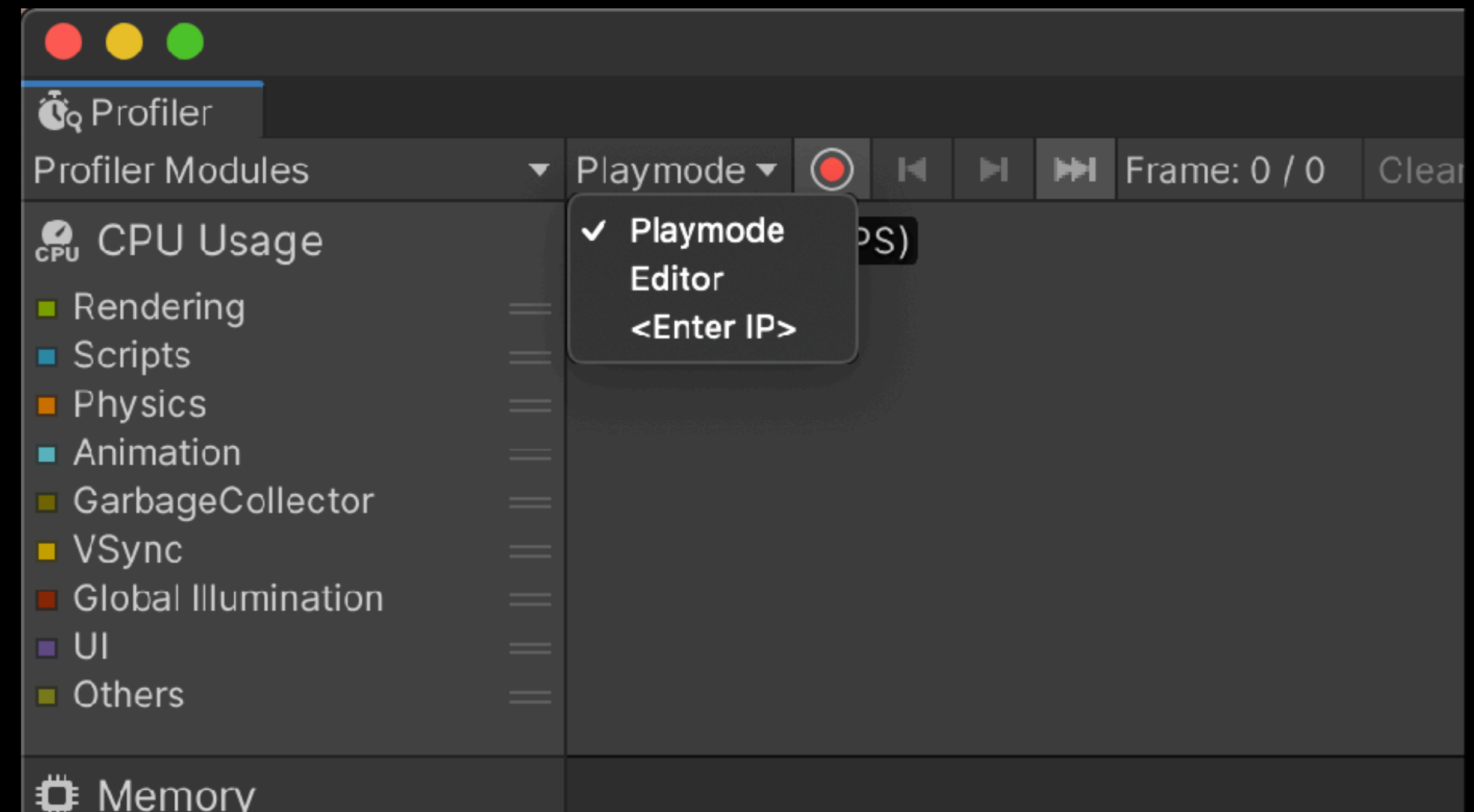
Prerelease

In Development

We're making the profile data much more flexible and accessible.

We're redeveloping the Player connection to make it more reliable across all devices.

We're also making it possible to create your own runtime counters and have them exposed via API.

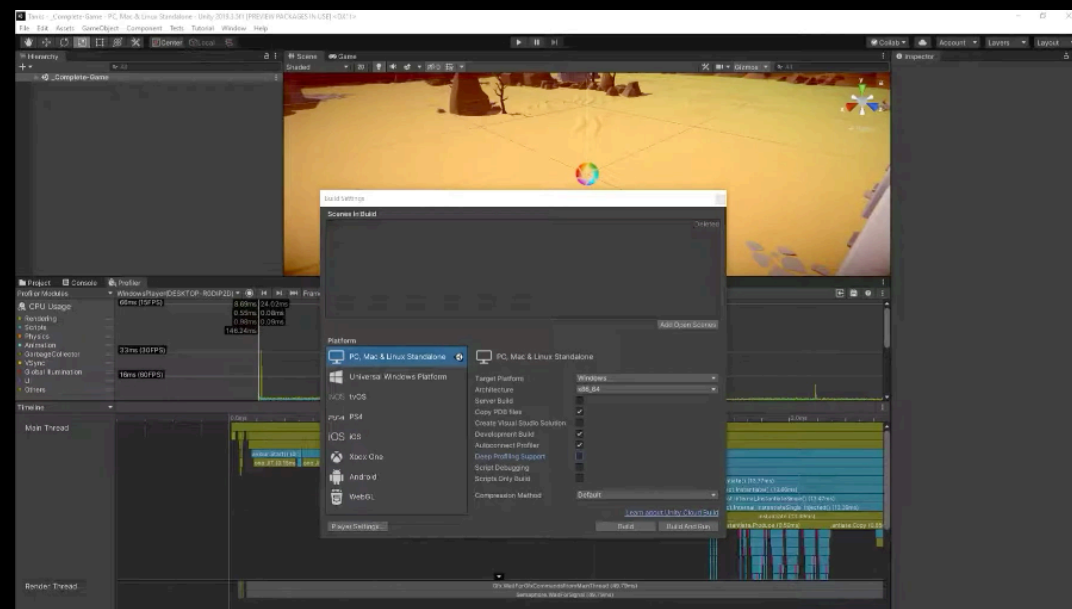




# W. Reliability & performance. Creative work

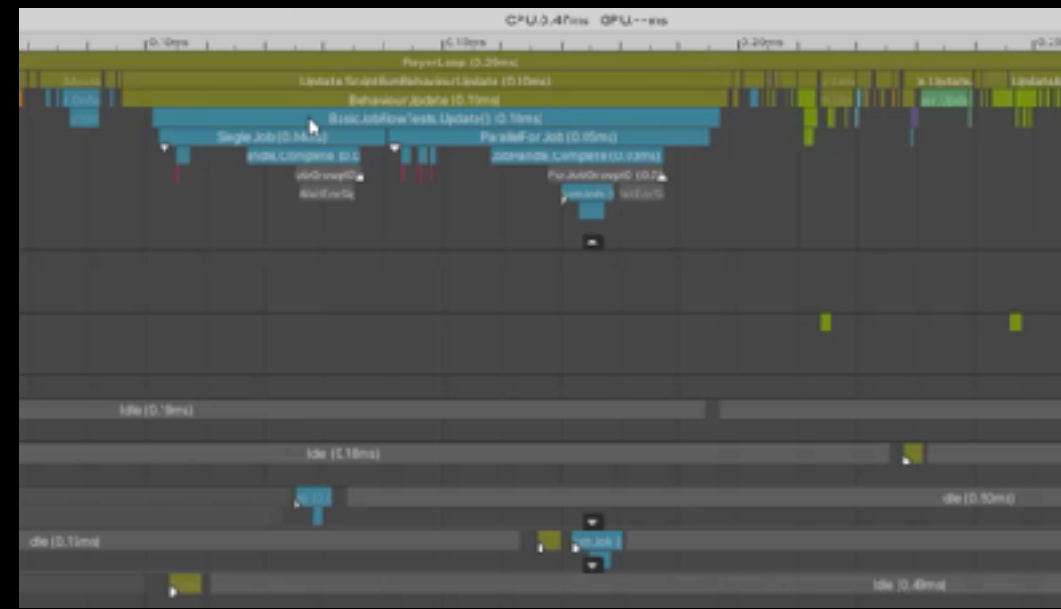
## Profiling and performance optimisation - highlights

### Released



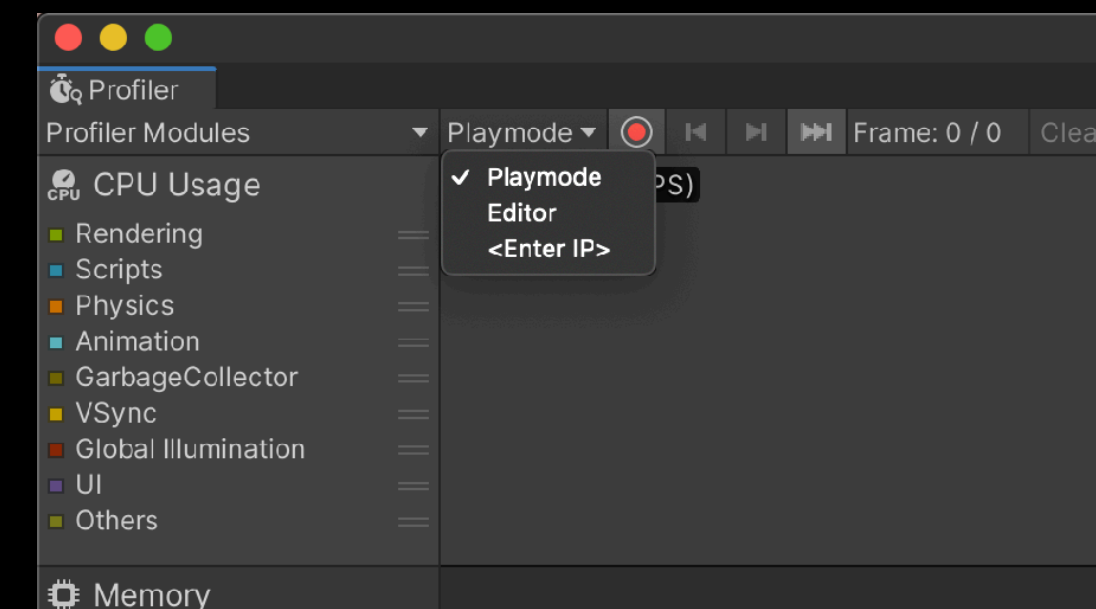
- Configurable frame count
- Deep Profiler support in Players
- Managed allocation call stacks in Players
- Full streaming of memory captures
- Full Documentation rewrite

### Prerelease



- Metadata support for C# Profiler API (2020.1)
- Job System (Flow Event) visualization in Profiler (2020.1)
- GPU Recorder (2020.1)
- Standalone Profiler (2020.1)
- Profile Analyzer Preview package
- Memory Profiler Preview package

### In Development



- Performance Counter API
- Stable Player connection
- Flow Event support for more use cases



# **Creative workflows.**

Scalable Quality. Realtime.

**Our second guiding principle is  
to build tools and workflows  
that reduce the time from idea  
to realization.**



# Creative workflows.

Scalable Quality. Re

## 2D projects

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### The Mission

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**Provide 2D creators with a world-class  
2D feature set, covering Foundations,  
World-building, Animation, Graphics,  
and Physics.**

# Creative workflows. Scalable Quality. Re

## 2D projects

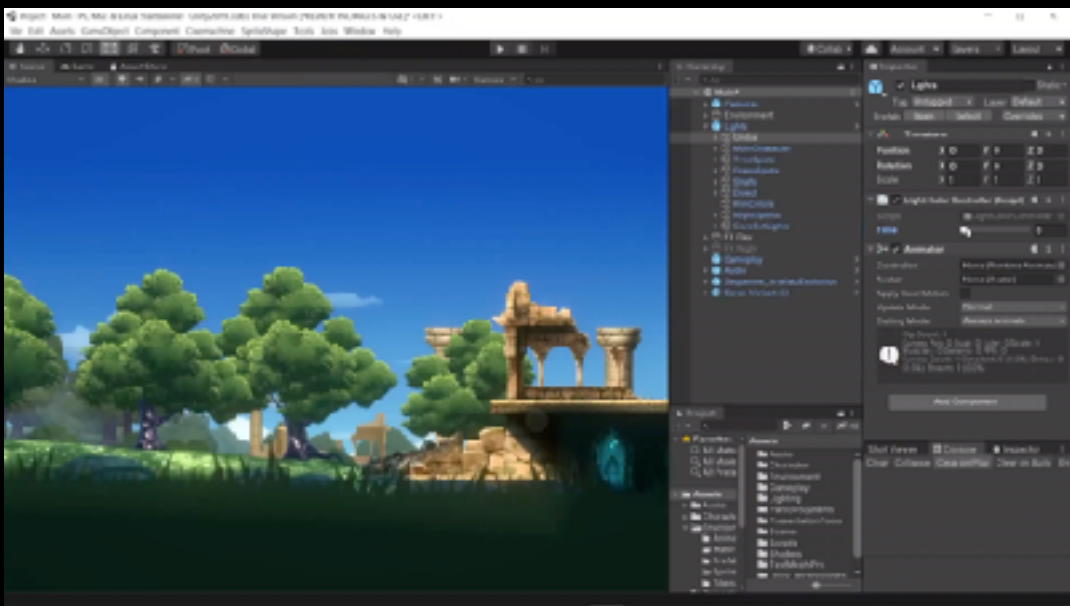
Released

Prerelease

In Development



A new suite of 2D tools was added to support the goals of professional 2D creators.



We're improving existing features prioritizing stability with an additional focus on performance and smoother workflows.



Continued focus on stability, performance, and workflows.



# Creative workflows.

Scalable Quality. Re

## 2D projects

Released

Prerelease

In Development

We ensured that we were supporting world-building in any style with tilemap in a variety of grids and Sprite Shape for organic-style games.

We focused on creating a workflow from Photoshop to Unity, supporting PSD layered files, especially for animation. For cameras we also ensured that cinemachine supports accurate pixel perfect rendering.







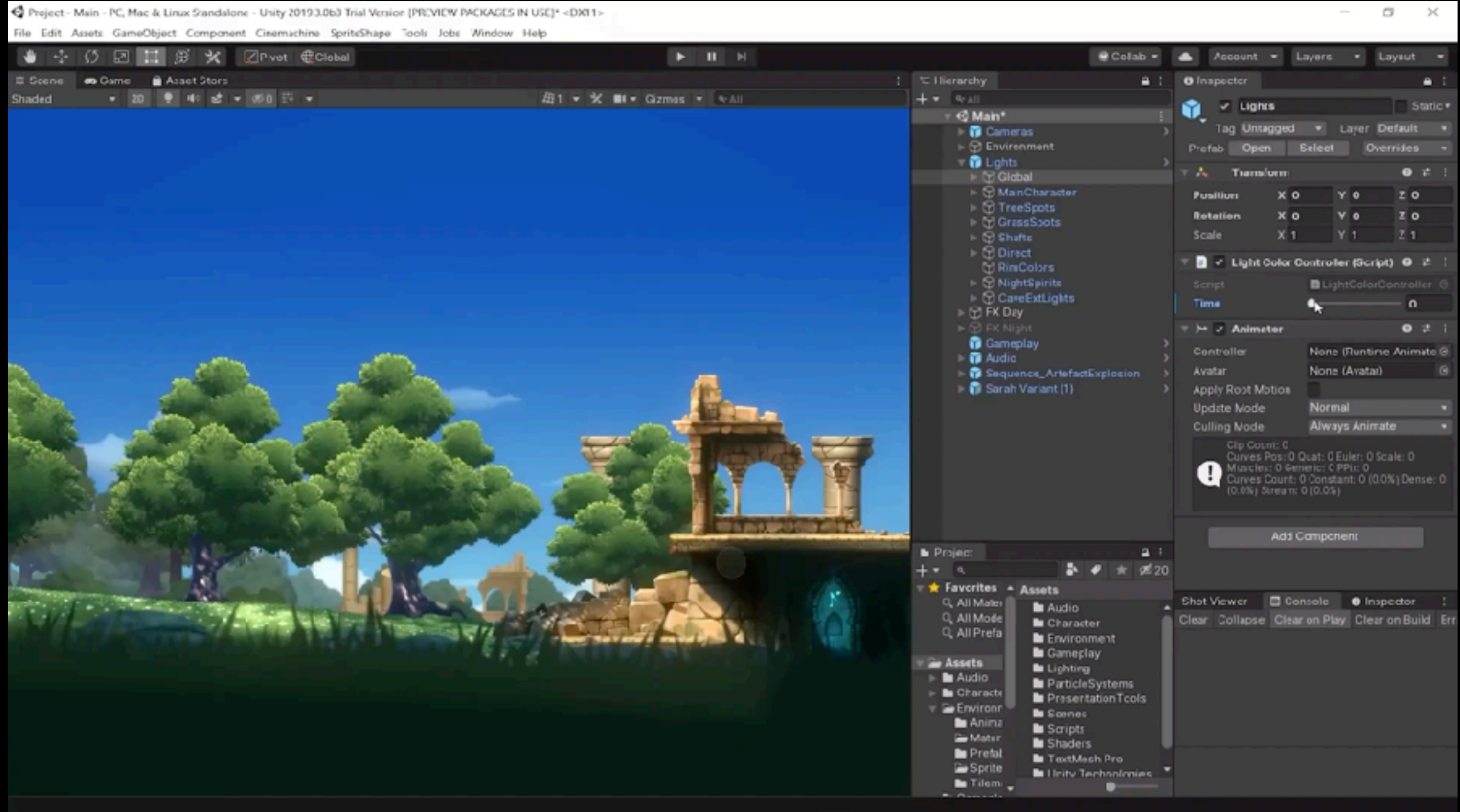
# Creative workflows. Scalable Quality. Re

## 2D projects

Released      Prerelease      In Development

We are aiming at improving the new project workflow for 2D projects by compiling all packages in a single fast-loading template that includes sensible defaults for building 2D experiences.

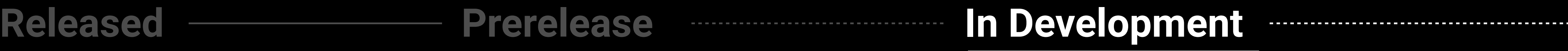
We are leveling up 2D rendering performance and implementing the Universal Render Pipeline as a standard. 2D Lights and Shadows, Secondary Textures and Shader Graph support bring powerful new ways to render in 2D.





# Creative workflows. Scalable Quality. Realtime.

## 2D projects



We will continue to focus on stability, performance, and improved workflows.

We want to ensure that the current feature set grows from strength to strength with your projects and goals as guidance.







# Creative workflows.

Scalable Quality. Re

## 2D projects - highlights

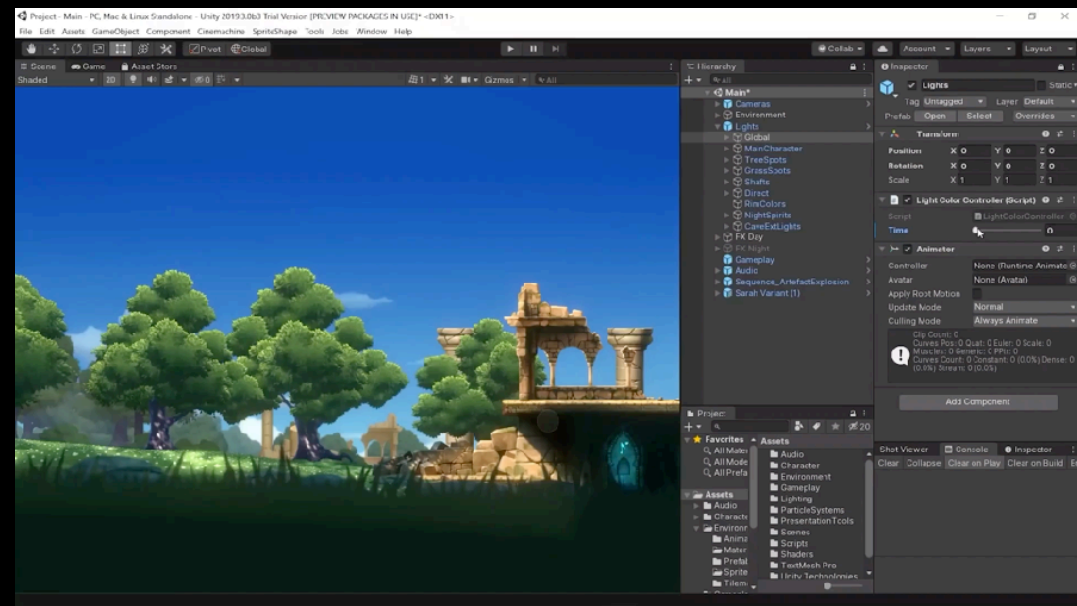
Released

Prerelease

In Development



- 2D Animation
- 2D PSD Importer
- 2D Sprite Shape
- 2D Pixel Perfect (Standalone)



- Improved 2D Template
- 2D Renderer



- Improved 2D workflows
- Improved 2D performance



e. **Creative workflows.** Scalable Quality. Re

**Programming**

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The Mission

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**Revolutionizing coding workflows  
for programmers and  
non-programmers alike.**



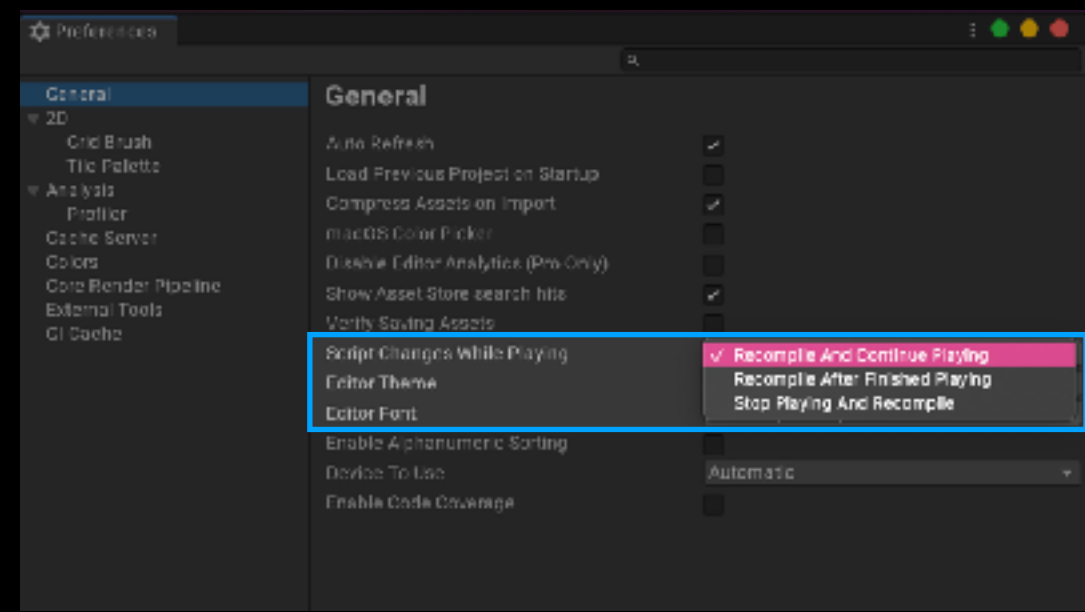
# e. Creative workflows. Scalable Quality. Re

## Programming

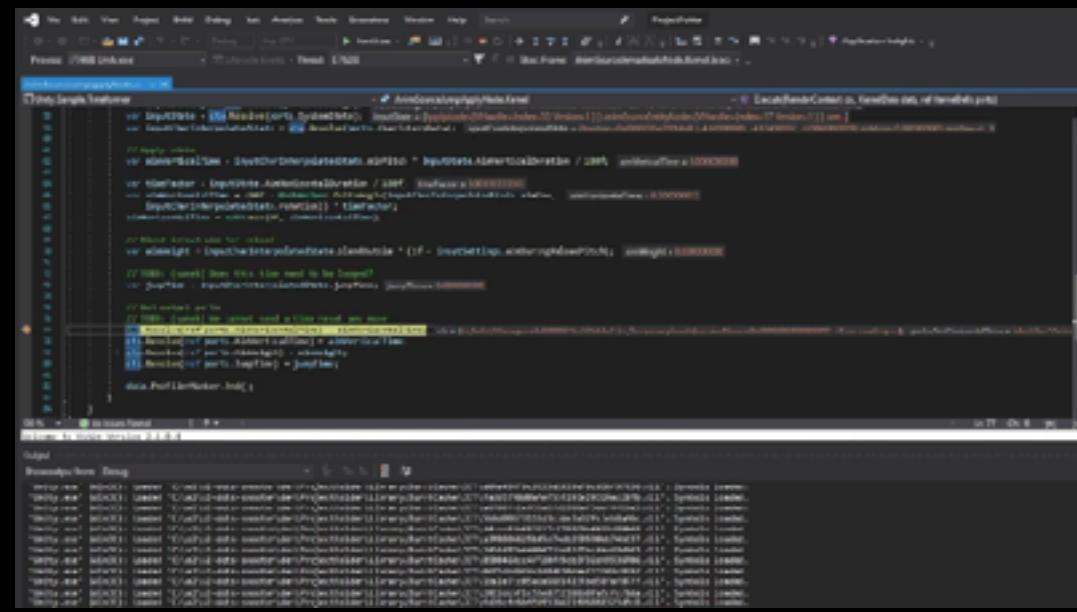
Released

Prerelease

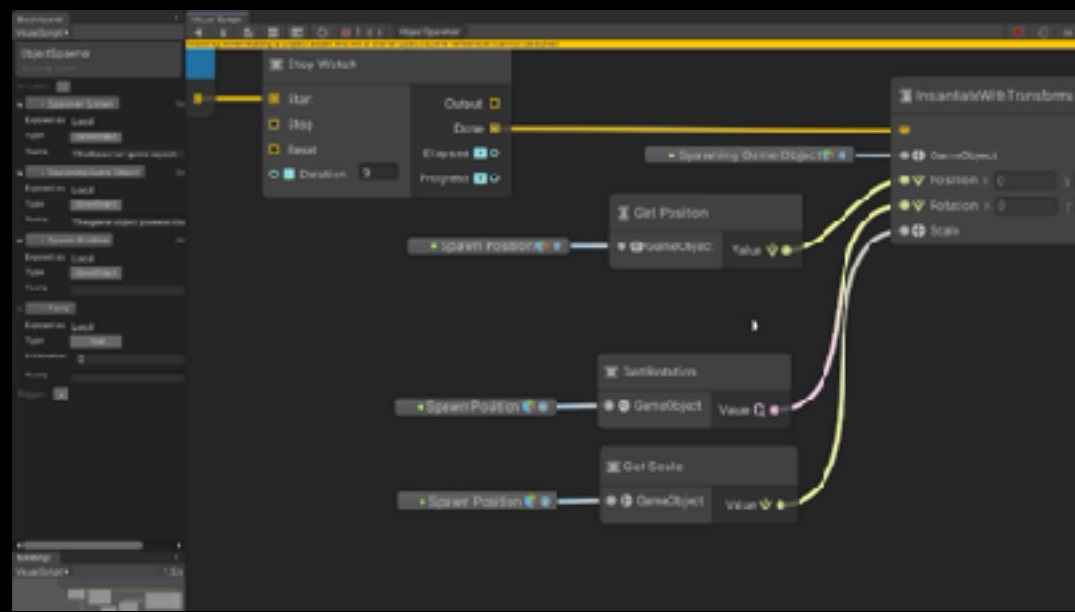
In Development



Reduced iteration times, expanding Burst Compiler platform support.



We are evolving the Burst Compiler as a development tool, adding Native debugging capabilities.



Make it easier for everyone to create code by providing a node-based scripting solution and reducing player build time between code iterations.



# e. Creative workflows. Scalable Quality. Re

## Programming

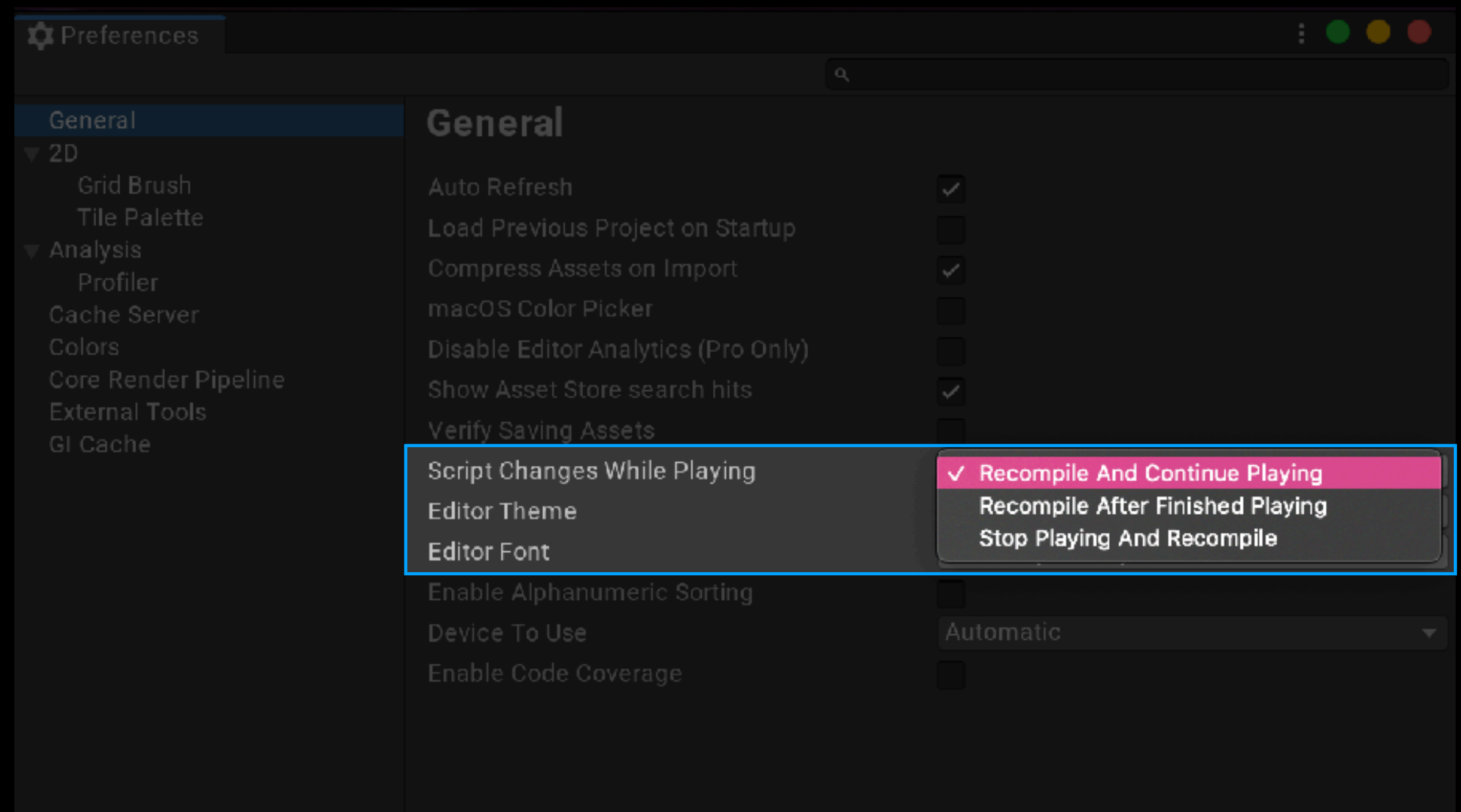
Released

Prerelease

In Development

We added Configurable Enter Play mode to help reduce iteration time.

We also expanded the reach of our new Burst Compiler, adding further platform support.





# Creative workflows. Scalable Quality. Re

## Programming

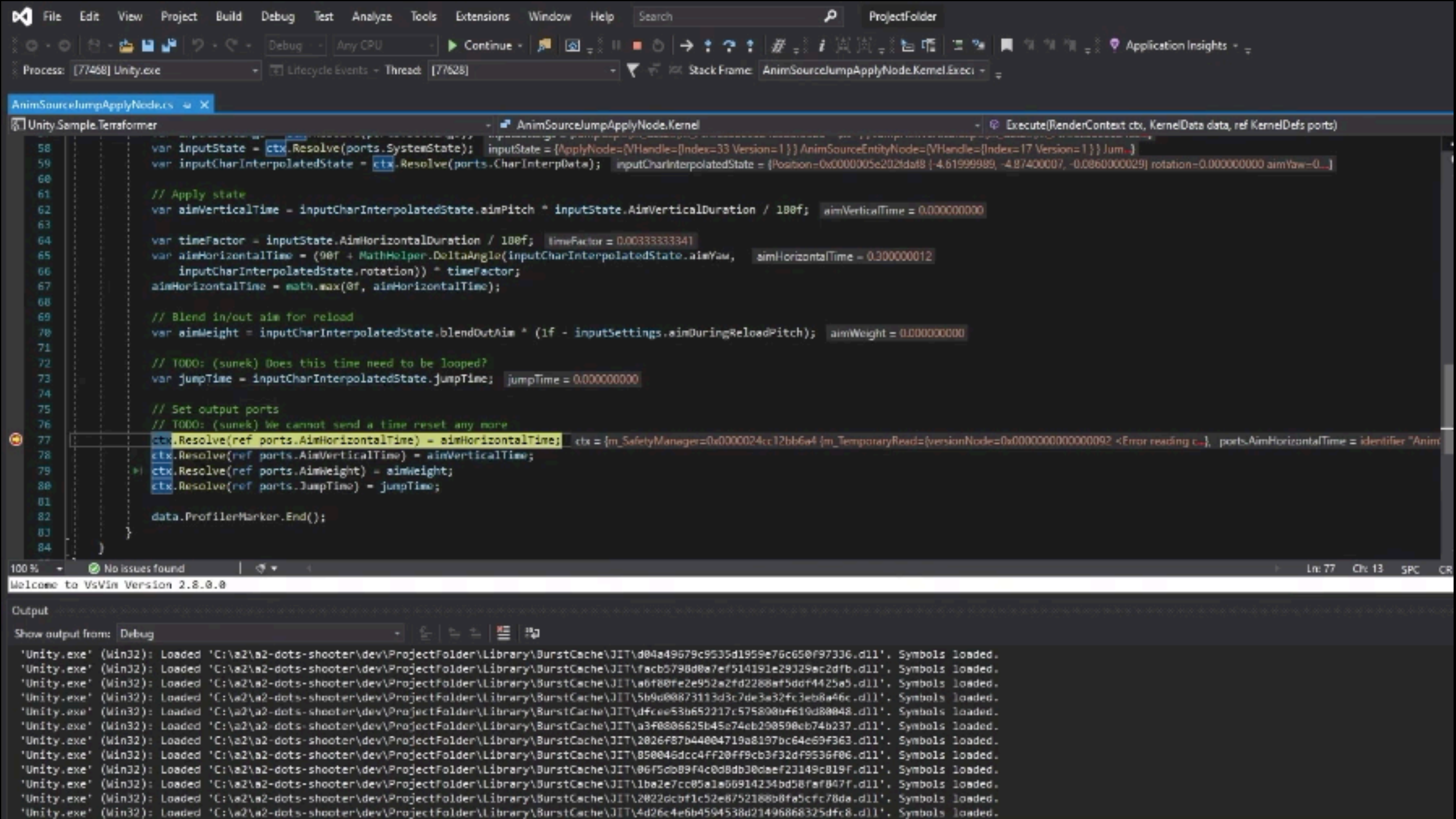
Released

Prerelease

In Development

We are evolving the Burst Compiler as a development tool, adding Native debugging capabilities.

Using a native debugger attached to Unity, you can now set breakpoints, skip over and step into code. You can also inspect and navigate call-stacks, variables, autos and threads.





# e. Creative workflows. Scalable Quality. Re

## Programming

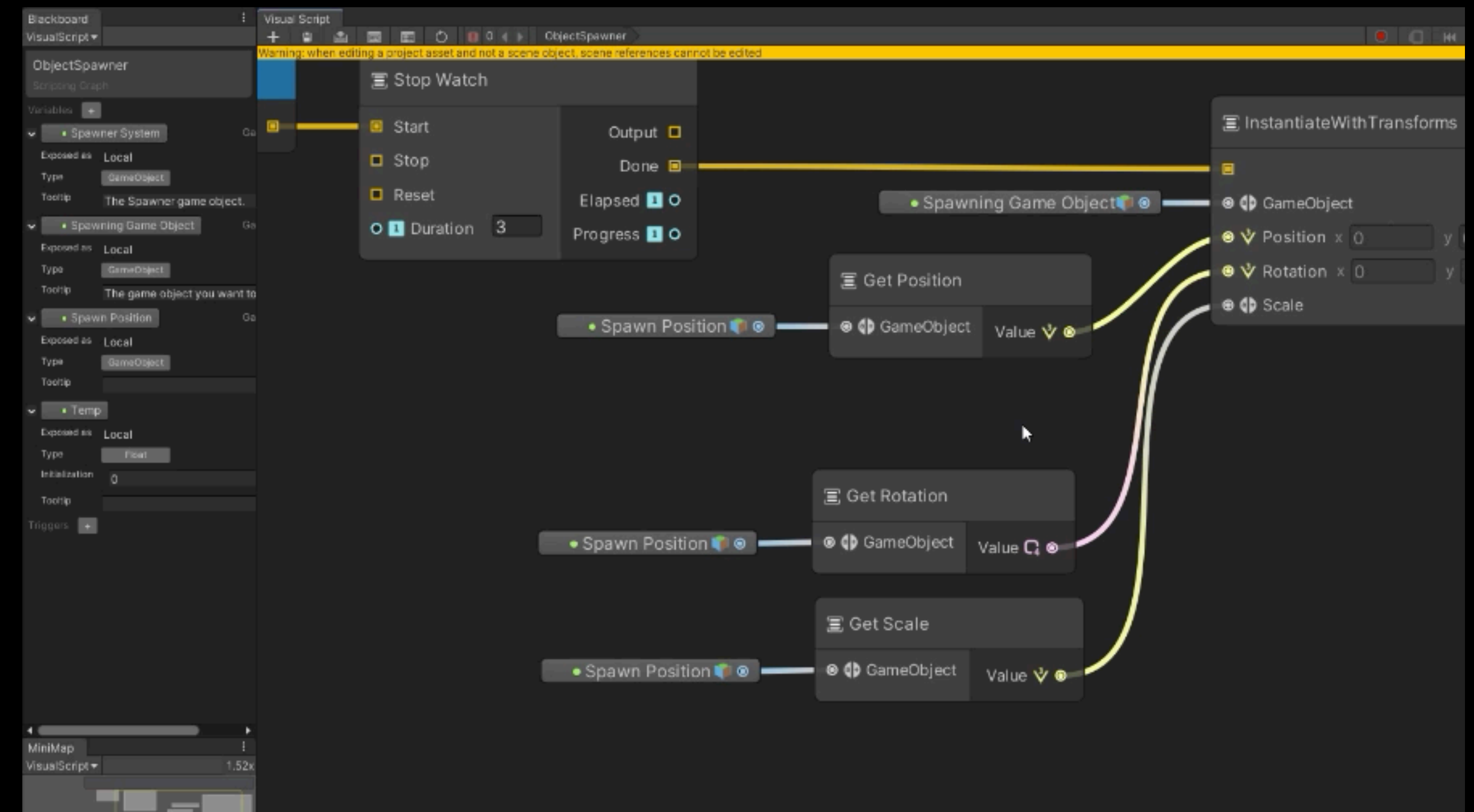
Released

Prerelease

In Development

Aimed at non-programmers, the Visual Scripting Editor will let you create Unity scripts with no C# knowledge required. An intuitive graphical interface with a comprehensive and extensible library of nodes is at your disposal to make it easy to create, debug, and use scripts.

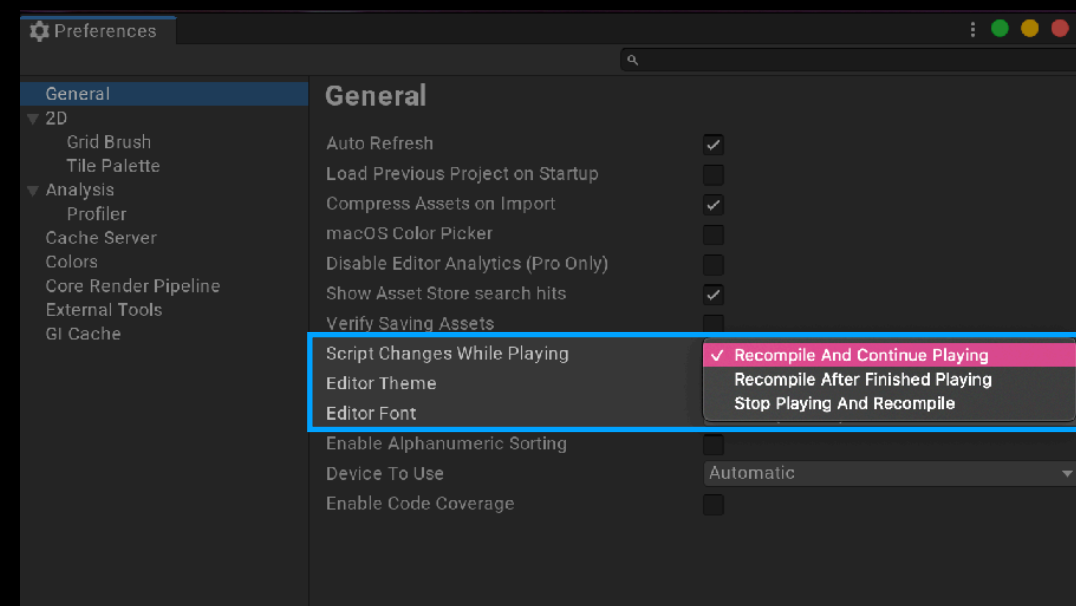
Reduce player build time between code iterations to make them scale better with the size of the code change.



# e. Creative workflows. Scalable Quality. Re

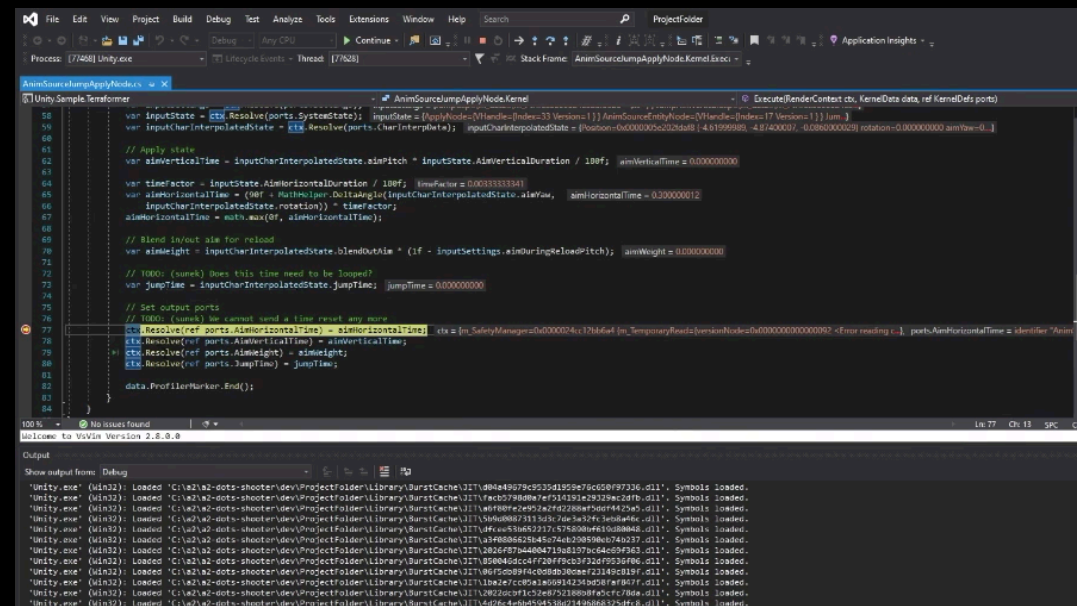
## Programming - highlights

### Released



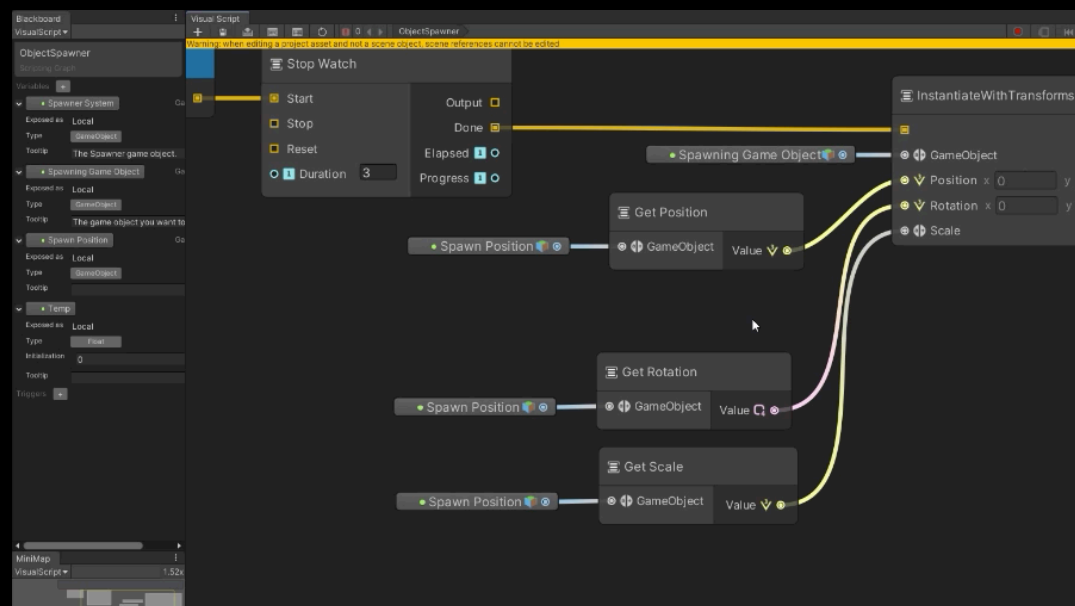
- Burst 1.2
  - Multi-thread compilation (standalone player)
  - Added support for further popular platforms
- Entities.ForEach (Preview)
- Configurable Enter Play mode
- Script-only patching
- JetBrains Rider integration package
- VS Code integration package

### Prerelease



- Burst 1.3
  - Native debugging
  - Aliasing control
  - Desktop cross-compilation support
- Visual Studio integration package
- IL2CPP improved compilation performance

### In Development



- Visual Scripting
- Stabilize Entities Core API
- New Entities Debugger
- Reduced IL2CPP conversion time
- Roslyn Analyzer Support



# e. **Creative workflows.** Scalable Quality. Re

## Editor evolution

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### The Mission

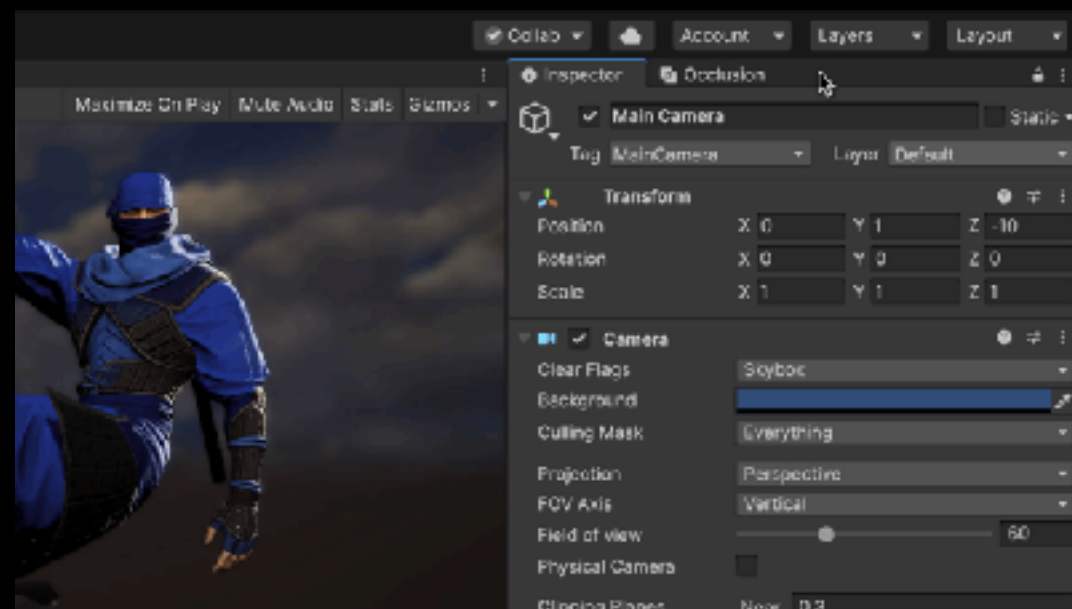
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**Improving look and feel, taking care of small workflow frictions, bringing new workflow paradigms.**

# e. Creative workflows. Scalable Quality. Re

## Editor evolution

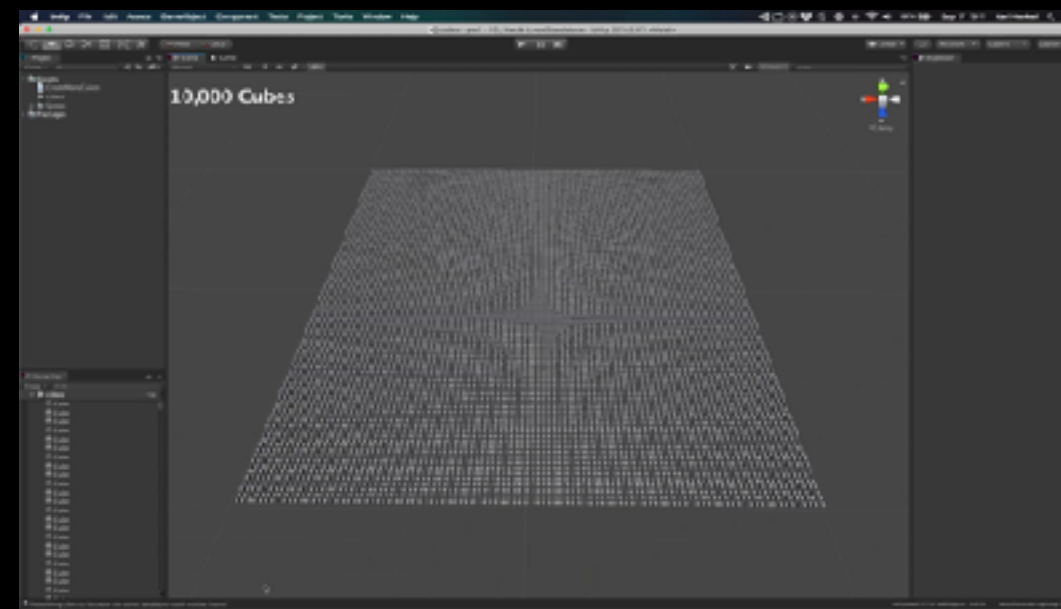
### Released



We modernized Editor themes, addressing accessibility and usability.

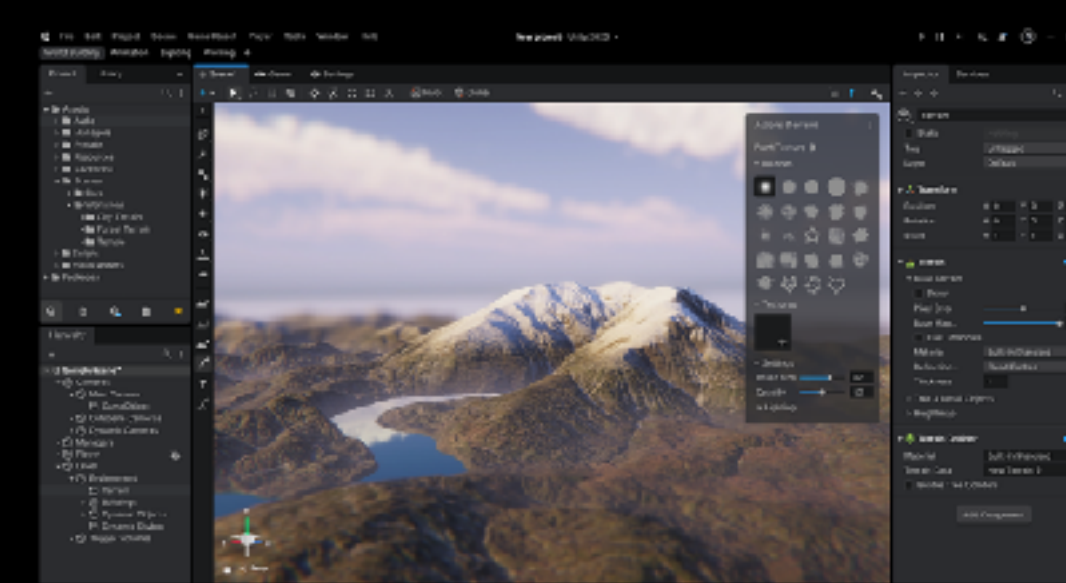
We introduced new ways to manage settings, preferences and shortcuts.

### Prerelease



We are broadly improving Editor performance throughout Unity, allowing you to scale without friction and iterate faster.

### In Development



We are creating new Editor paradigms for you to be more flexible in editing only the parts of the project you need to.

This lets you share the load more effectively across your team.



# e. Creative workflows. Scalable Quality. Re

## Editor evolution

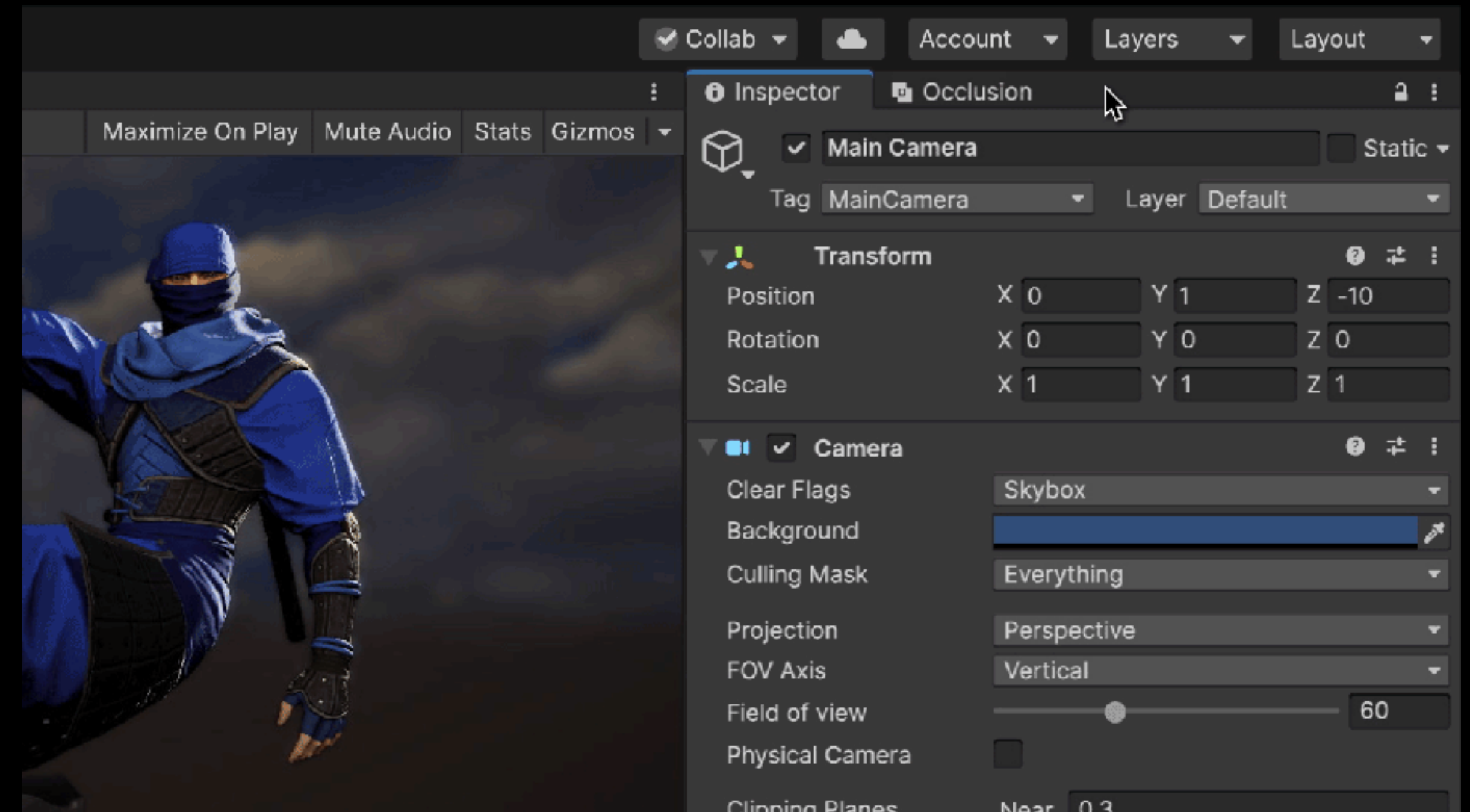
### Released

### Prerelease

### In Development

We introduced the new Editor theme in 2019.3 with a flat design and better support for high-resolution displays.

We consolidated all preferences and project settings into searchable windows, and added a Shortcuts Manager to allow you to customize the way you work.



# e. Creative workflows. Scalable Quality. Re

## Editor evolution

Released

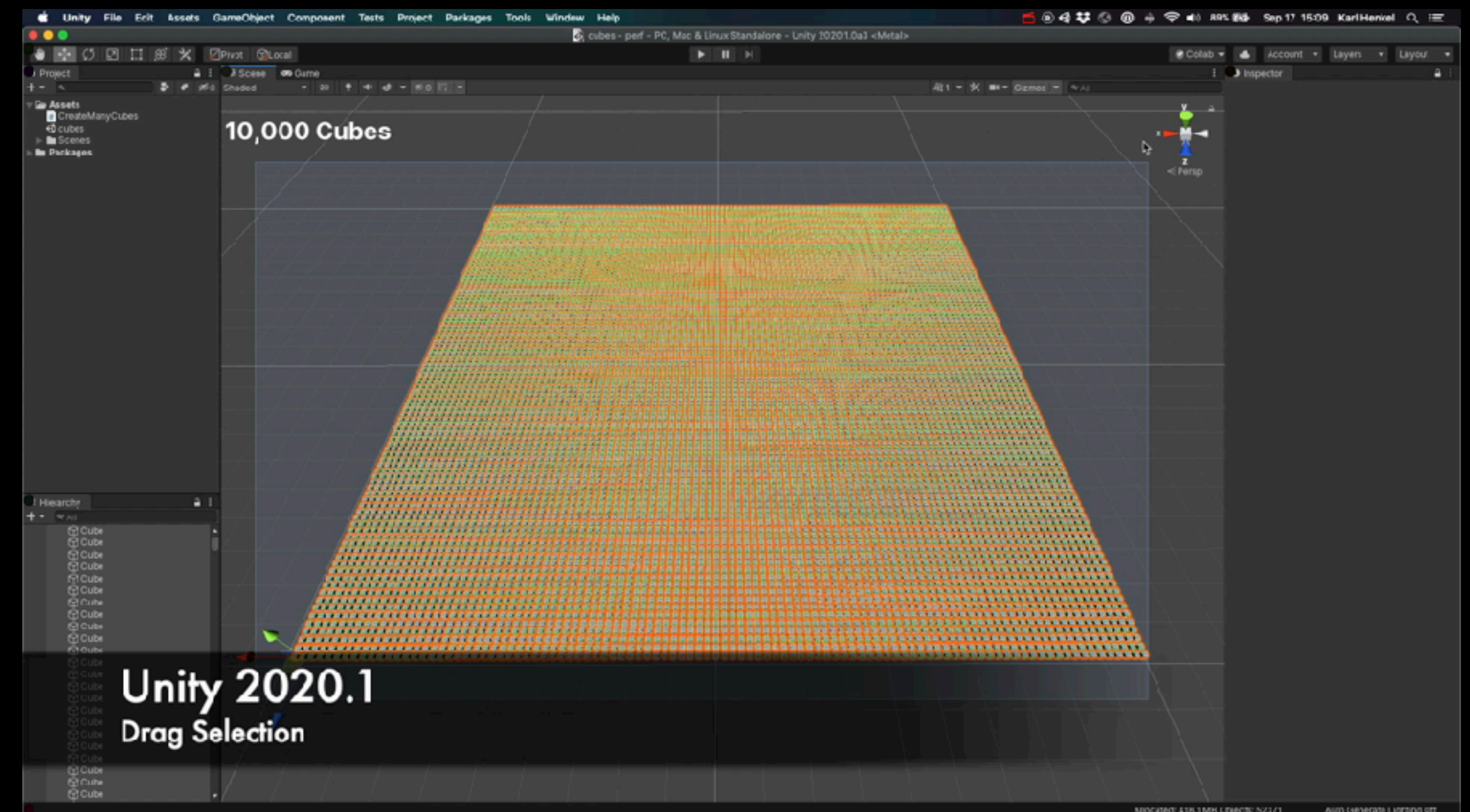
Prerelease

In Development

1 of 2

We've made major performance improvements across the Editor, everything from the way in which we manage selection, to control over how the Editor refreshes.

This means fewer interruptions, better support for large projects and easy performance adjustment of how Unity behaves while you work.





# e. Creative workflows. Scalable Quality. Re

## Editor evolution

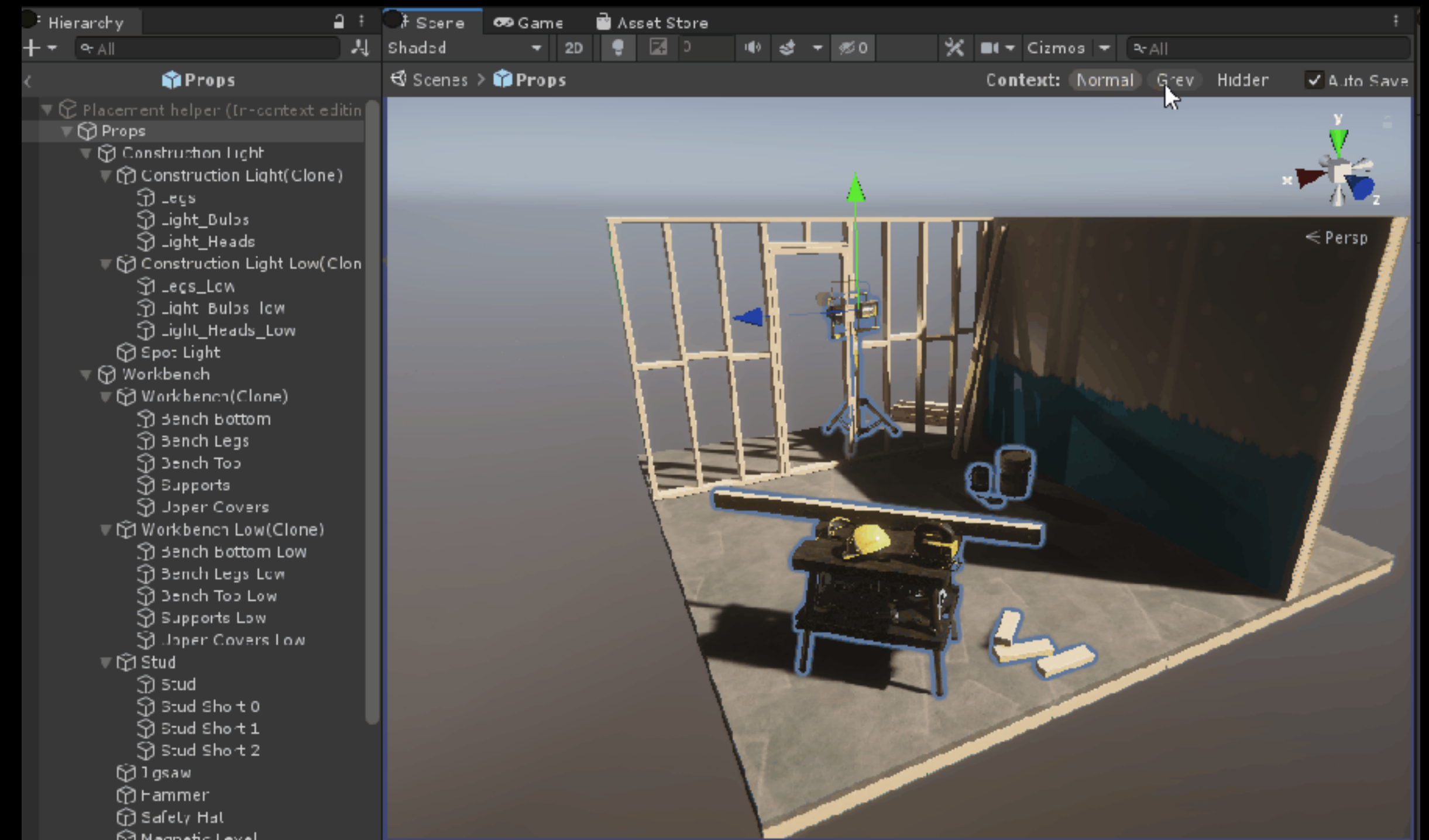
Released

Prerelease

In Development

2 of 2

We are supporting a more holistic Prefab editing workflow with the new Prefab Mode in Context, where you can see the context of a Prefab instance in the Scene View (but locked for editing) while you are editing the Prefab Asset of that instance.



# e. Creative workflows. Scalable Quality. Re

## Editor evolution

Released

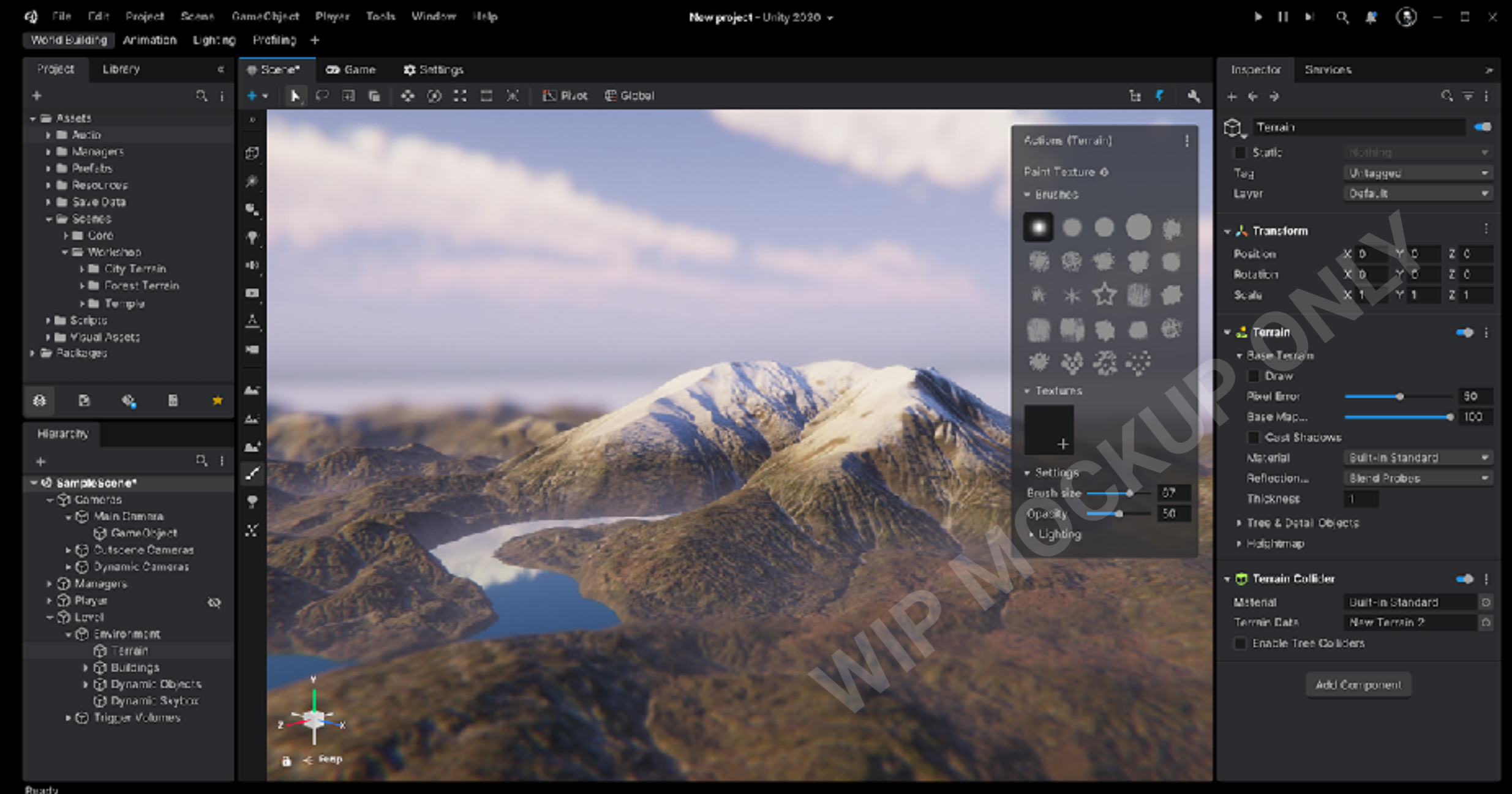
Prerelease

In Development

New workflows for Unity are coming.

We are building new ways to open Scenes, Prefabs, and other assets independently of one another as part of a new multi-document workflow.

This will add workspaces for you to create contexts for your tasks or simply break up your working environment into more manageable spaces. We will also make enhancements to panel behavior and broad accessibility improvements.

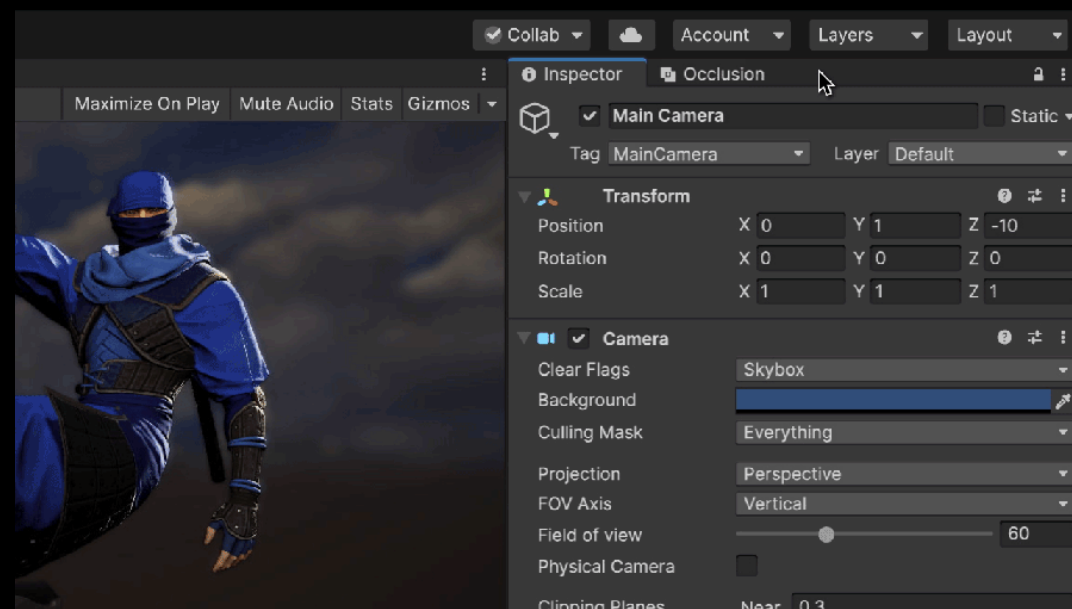




# e. Creative workflows. Scalable Quality. Re

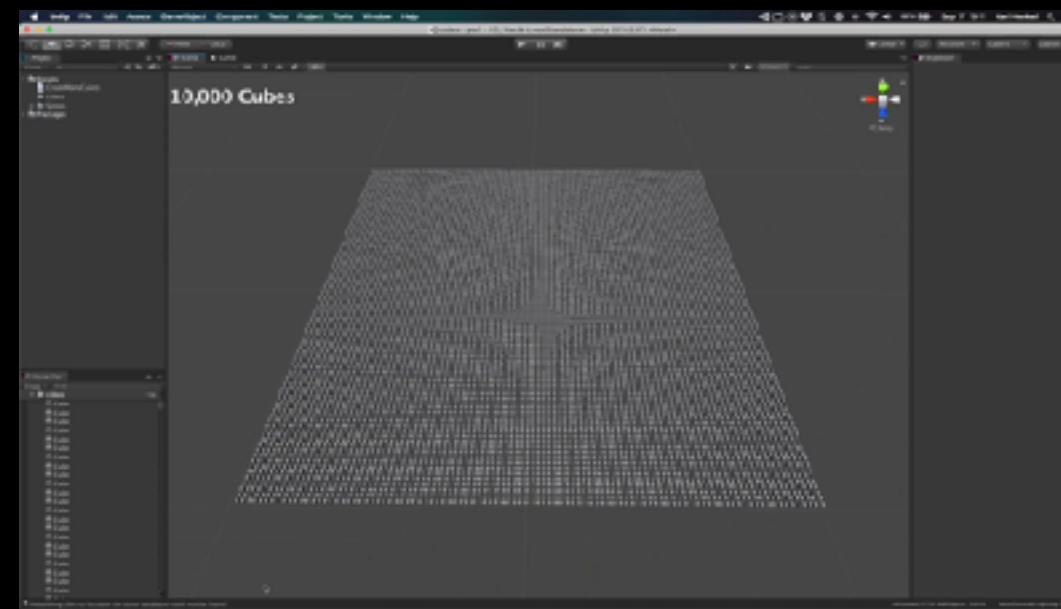
## Editor evolution - highlights

### Released



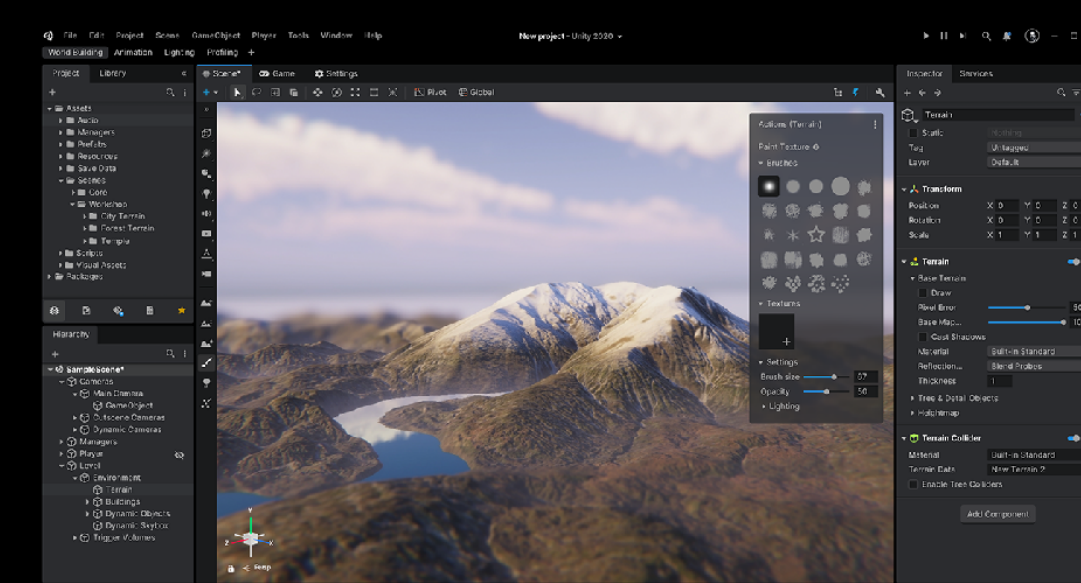
- High-resolution display support
- Project settings
- Shortcuts Manager
- Quick Search
- Modernized Editor themes
- Nested Prefabs, Variants
- Prefab Mode

### Prerelease



- Activity reporting (2020.1)
- Editor Speed (2020.1)
- Prefab Mode in-context (2020.1)
- Focused Inspector (2020.1)
- Code optimization switching (2020.1)
- Scene Templates (package)

### In Development



- Multi-document opening
- Workspaces
- Query Engine
- Prefab encapsulation
- Prefab performance improvements
- Scene overlay tooling

e. **Creative workflows.** Scalable Quality. Re

Quality of life improvements

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The Mission

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**Bringing many small improvements  
that improve your day-to-day workflow.**

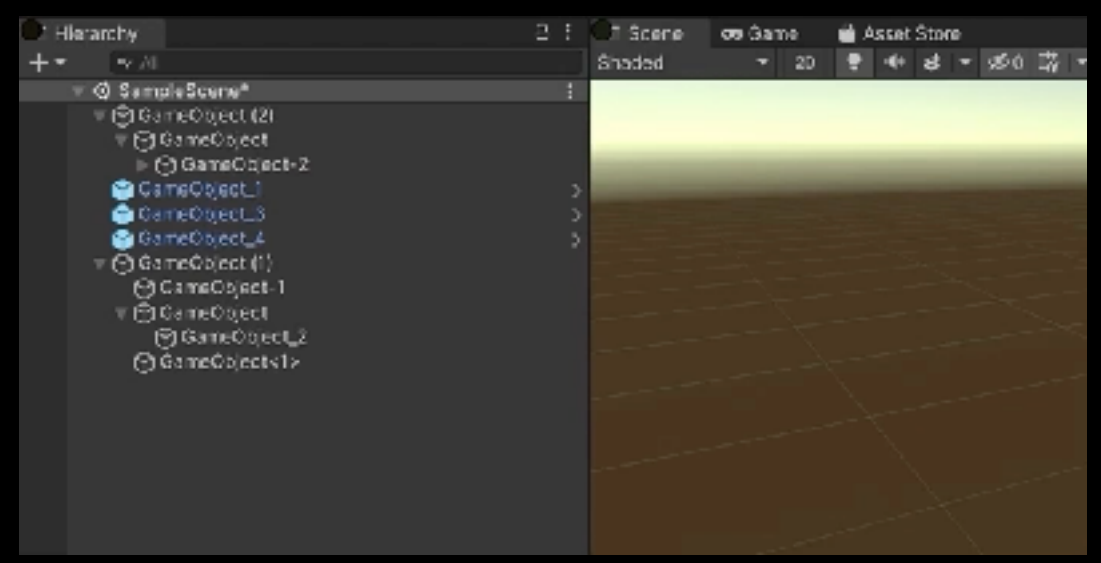




# e. Creative workflows. Scalable Quality. Re

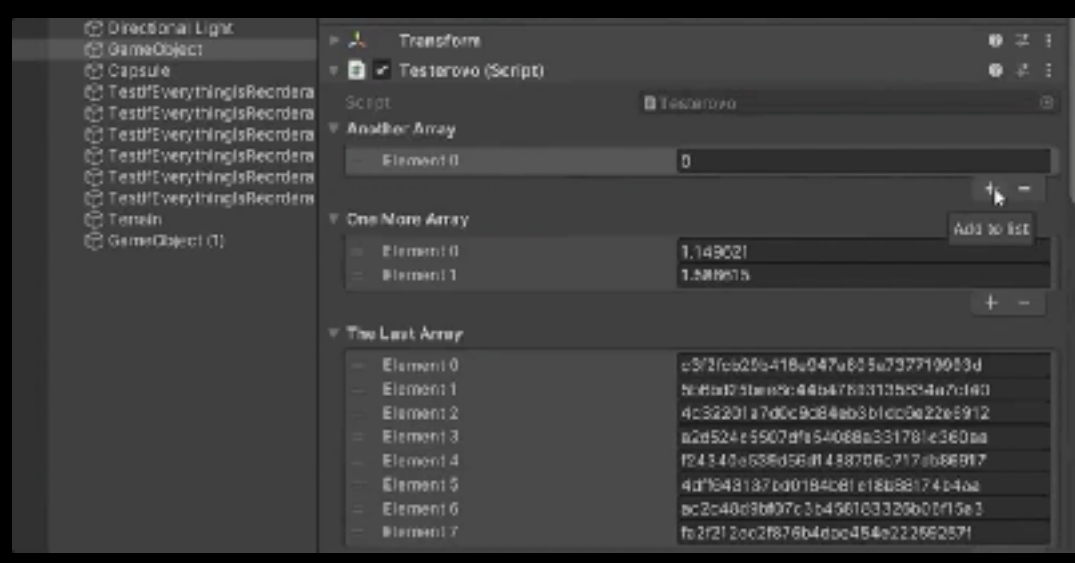
## Quality of life improvements

### Prerelease



In Prerelease versions of Unity, you'll see many of these updates, such as improvements to the Hierarchy, Inspector and Scene View.

### In Development



A great backlog of historical Unity usability requests are in the works.

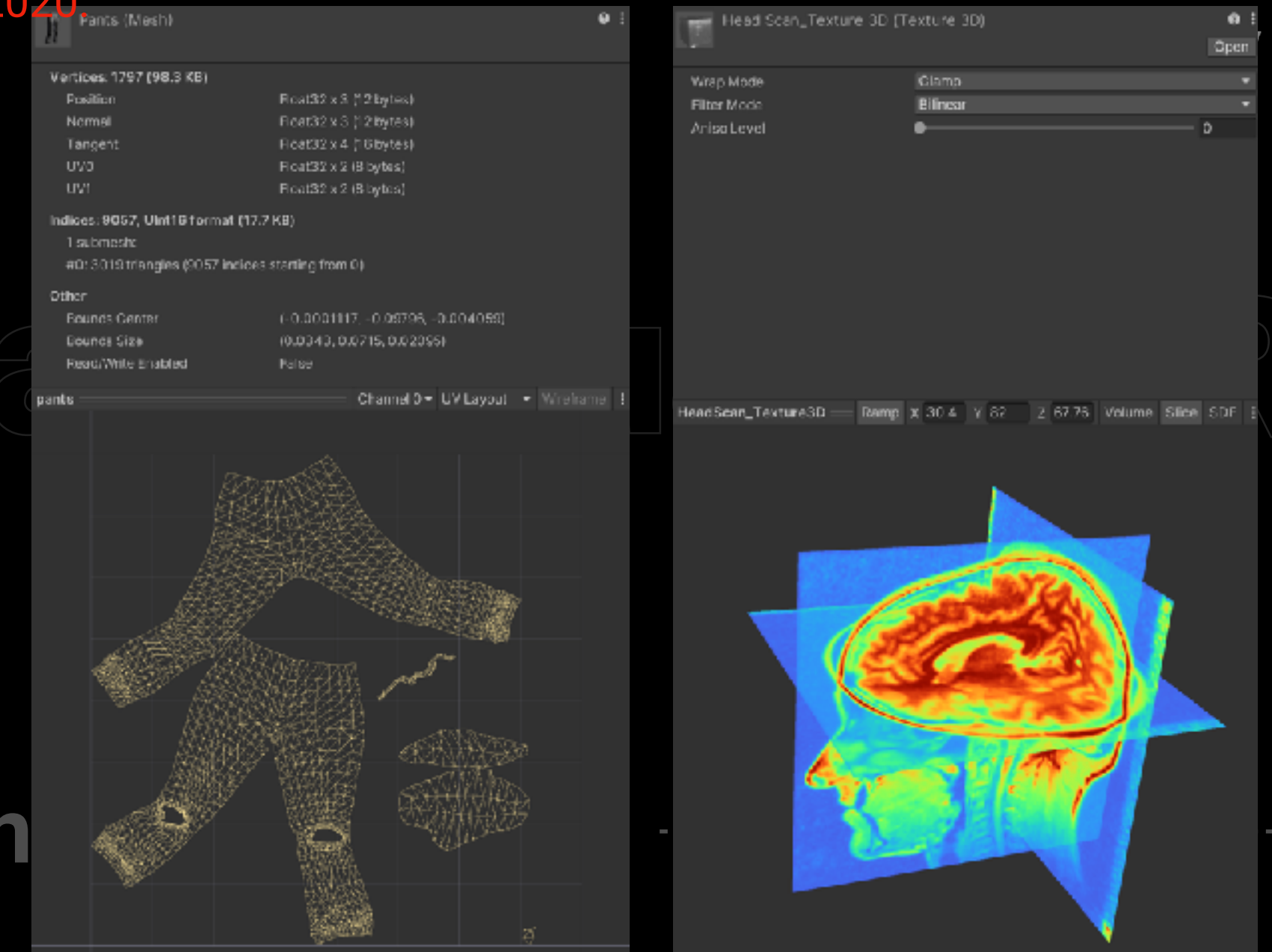
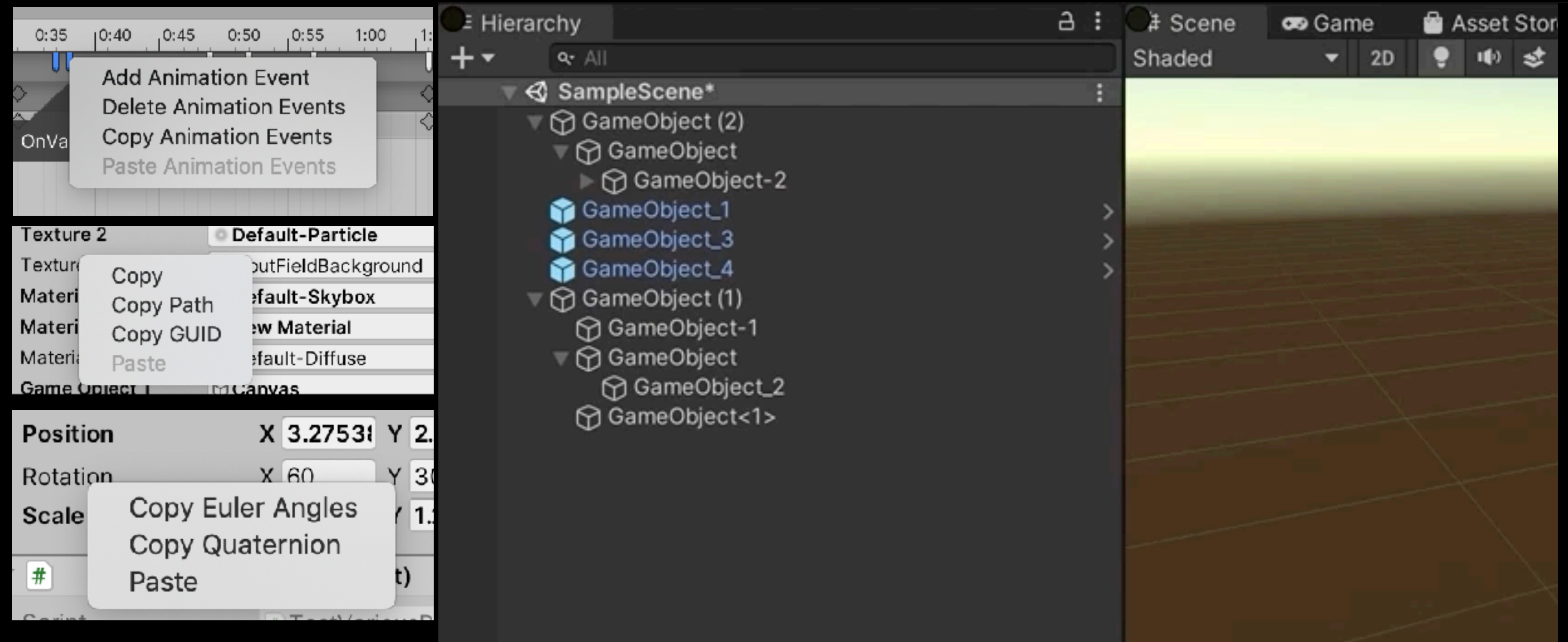
# Creative workflows.

## Quality of life improvements

### Prerelease

In Prerelease versions of Unity you'll see many of these updates already landing, such as improvements to the Hierarchy, inspector and Scene.

These include improvements to copy-pasting of GameObjects and properties, cut and paste in the Hierarchy, better framing in the Scene View, as well as improved inspector Previews for meshes, textures and cubemap arrays.





# Creative workflows.

## Quality of life improvements

Prerelease

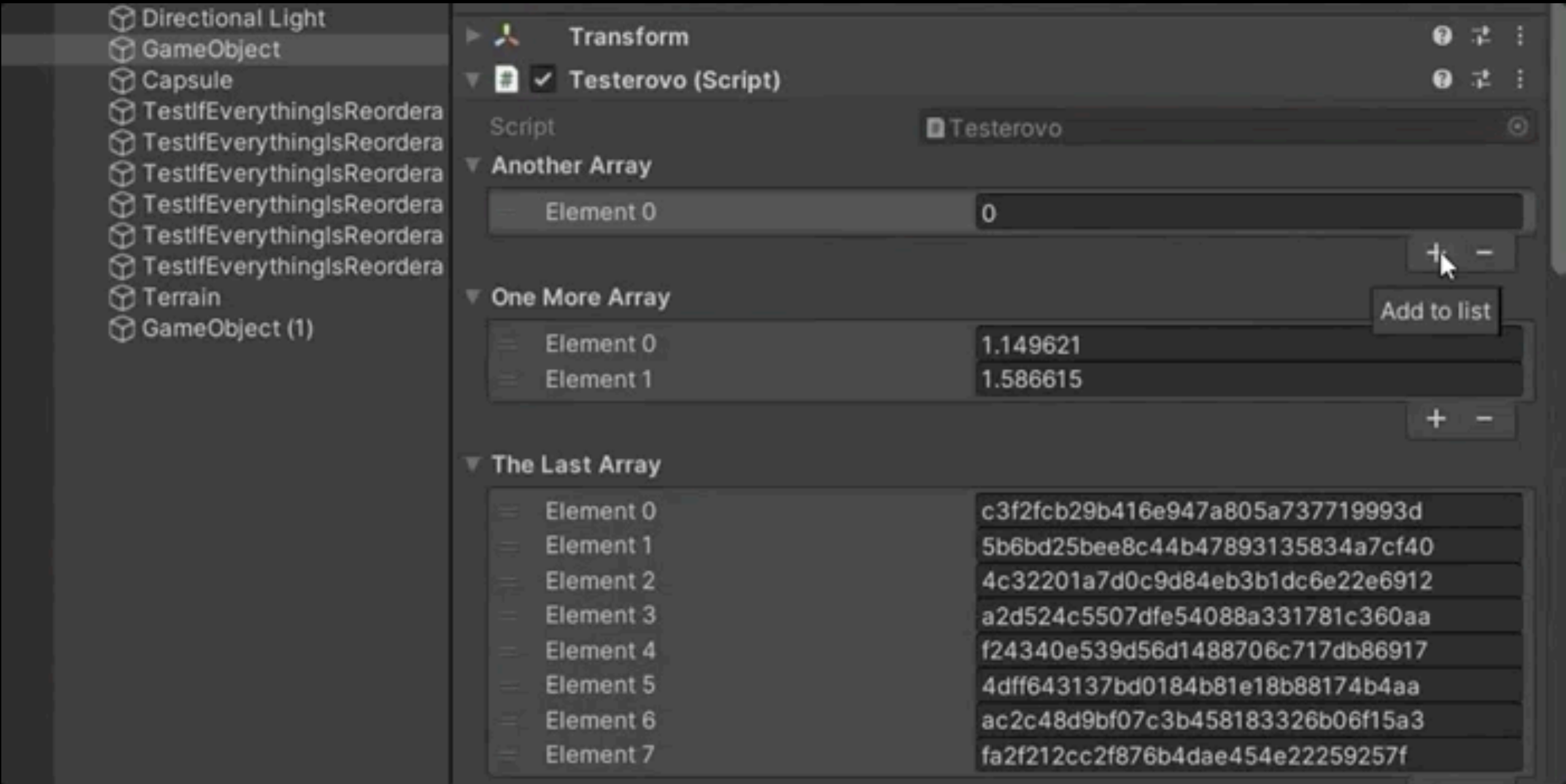
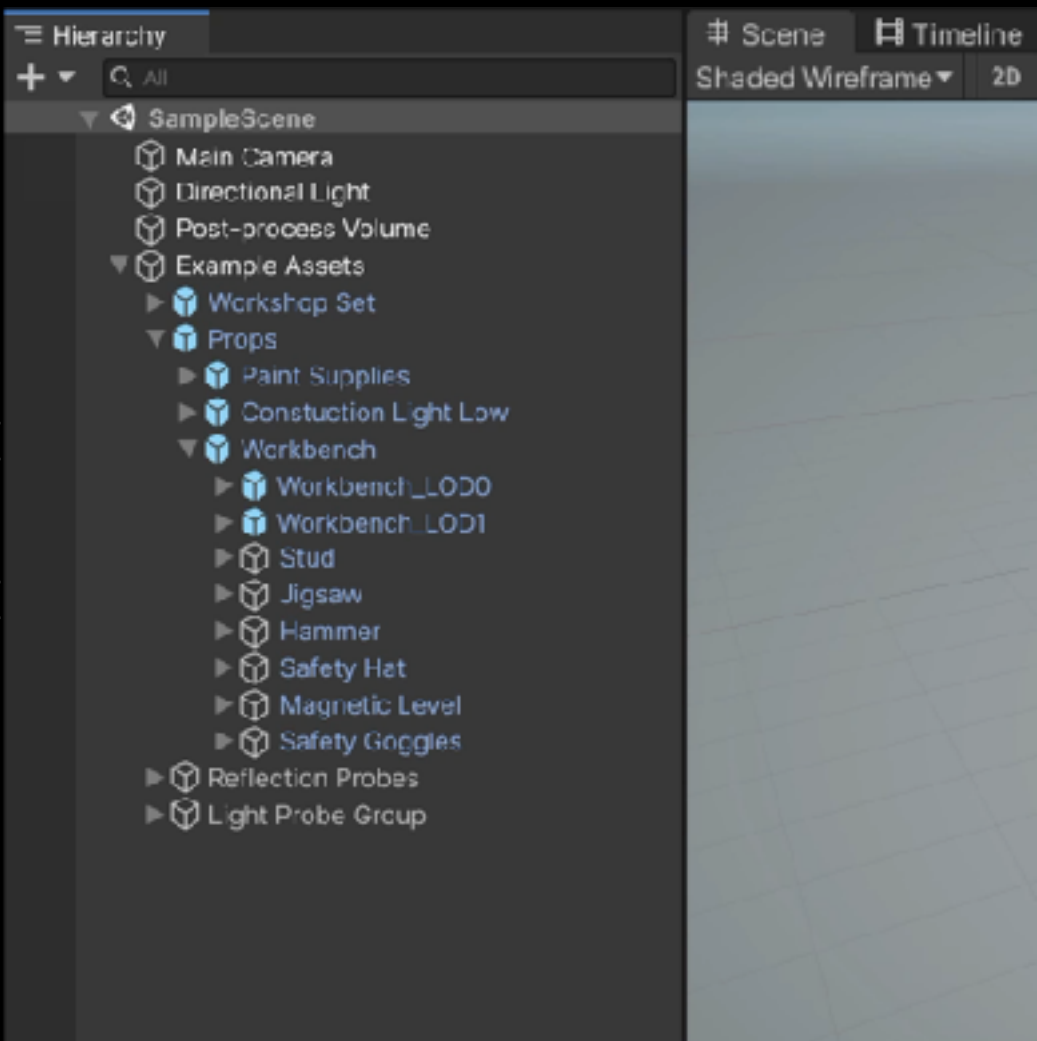
From our broad survey work with you, we have begun to regularly queue up many more improvements to keep adding throughout 2020 and beyond.

Coming soon are re-orderable arrays, active parent object in the Hierarchy, improved UX for reparenting and folders for the Hierarchy.

Thanks to everyone who has been contributing via the Forum, Twitter and Reddit!

# Scalable

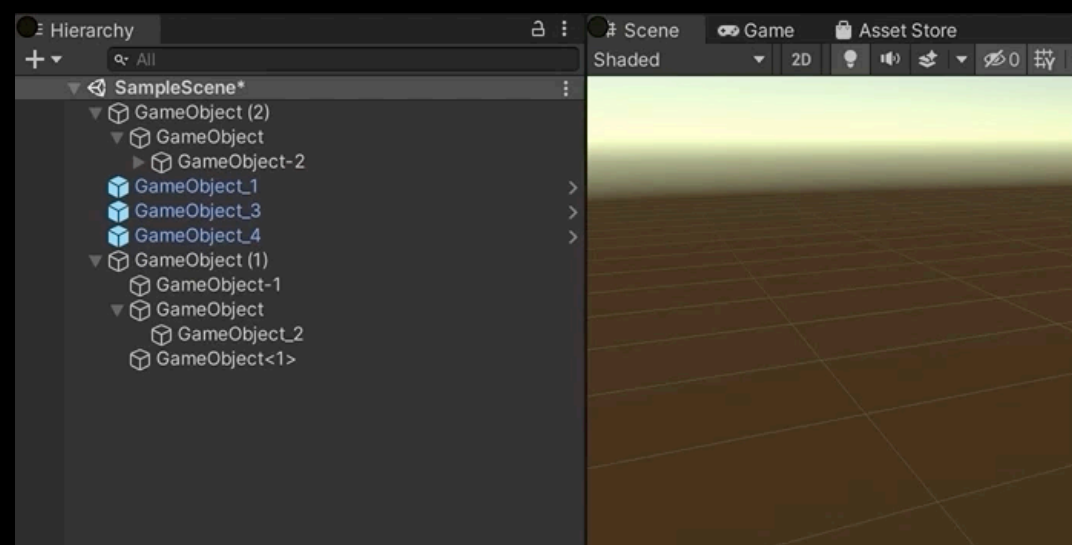
In Development



# e. Creative workflows. Scalable Quality. Re

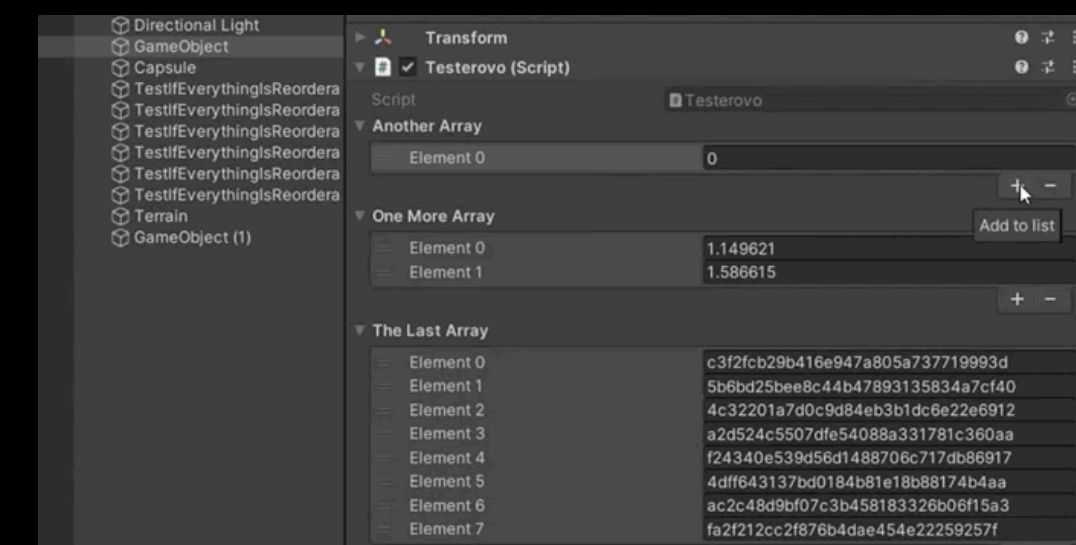
## Quality of Life Improvement - highlights

### Prerelease



- Improved copy-paste for inspector properties
- Cut and paste in Hierarchy window
- Improved inspector Preview for meshes, 3D textures, cubemap arrays

### In Development



- Re-orderable arrays & lists in inspector
- Default parent object in Hierarchy view
- Improved UX for drag-reparenting items in Hierarchy view
- Folders in Hierarchy view



e. **Creative workflows.** Scalable Quality. Re

## Animation

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### The Mission

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**Provide runtime and tools to author and  
play back animation in Unity.**



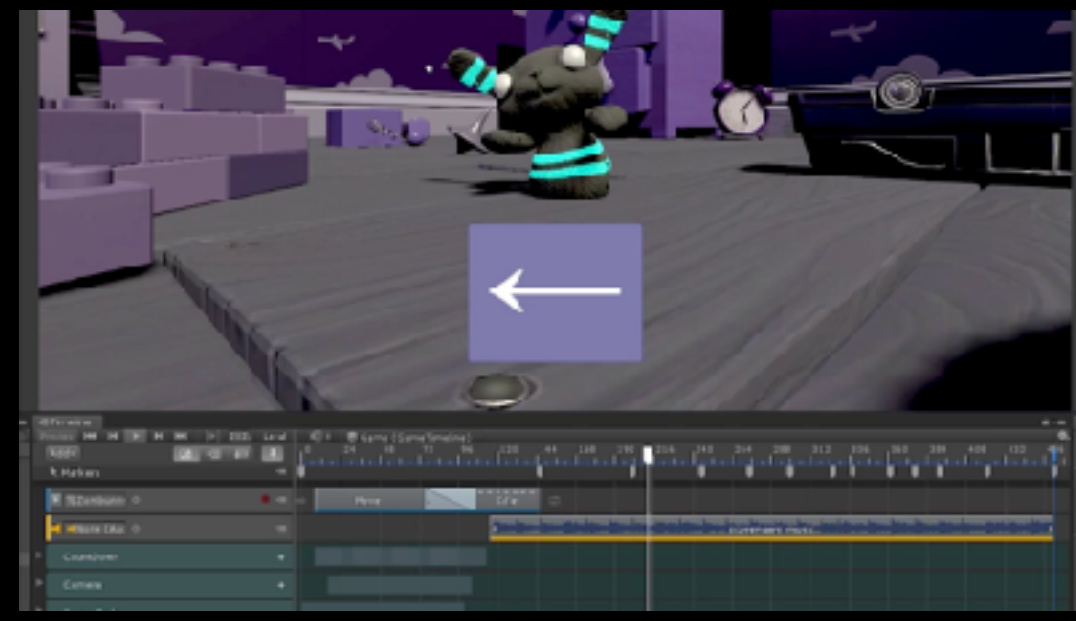
# e. Creative workflows. Scalable Quality. Re

## Animation

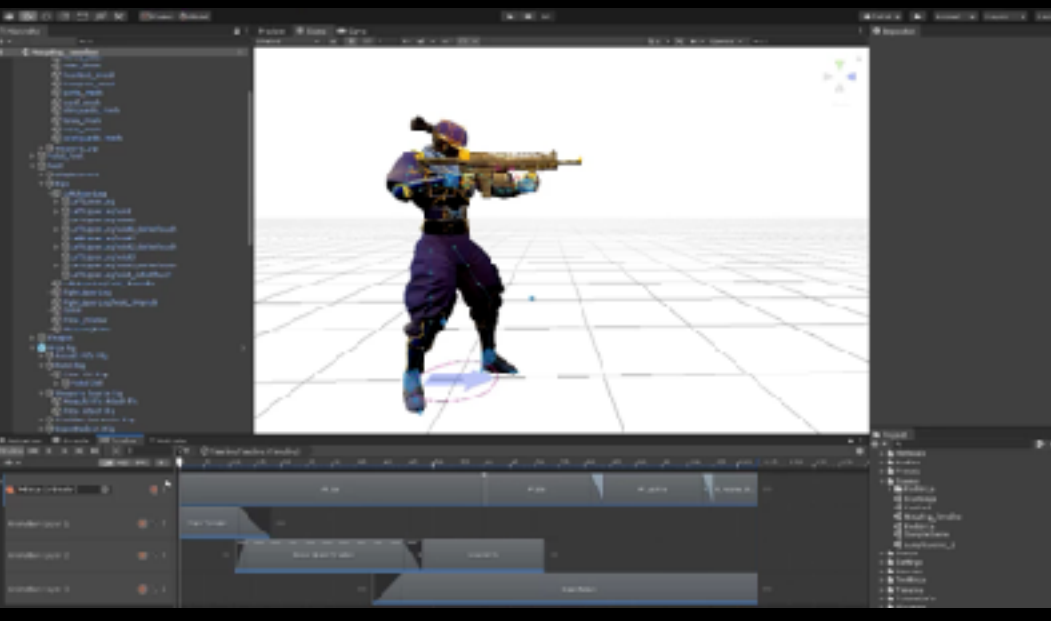
Released

Prerelease

In Development



Made it easier for non-programmers to work with interactive Timelines



Creating tools for animation artists to do less manual work, achieve better quality, and exert more creative control



Low-level systems for DOTS  
Animation followed by higher level features like animation graphs, state machine, Timeline and Kinematica to make DOTS animation available to all



e. **Creative workflows.** Scalable Quality. Re

# Animation

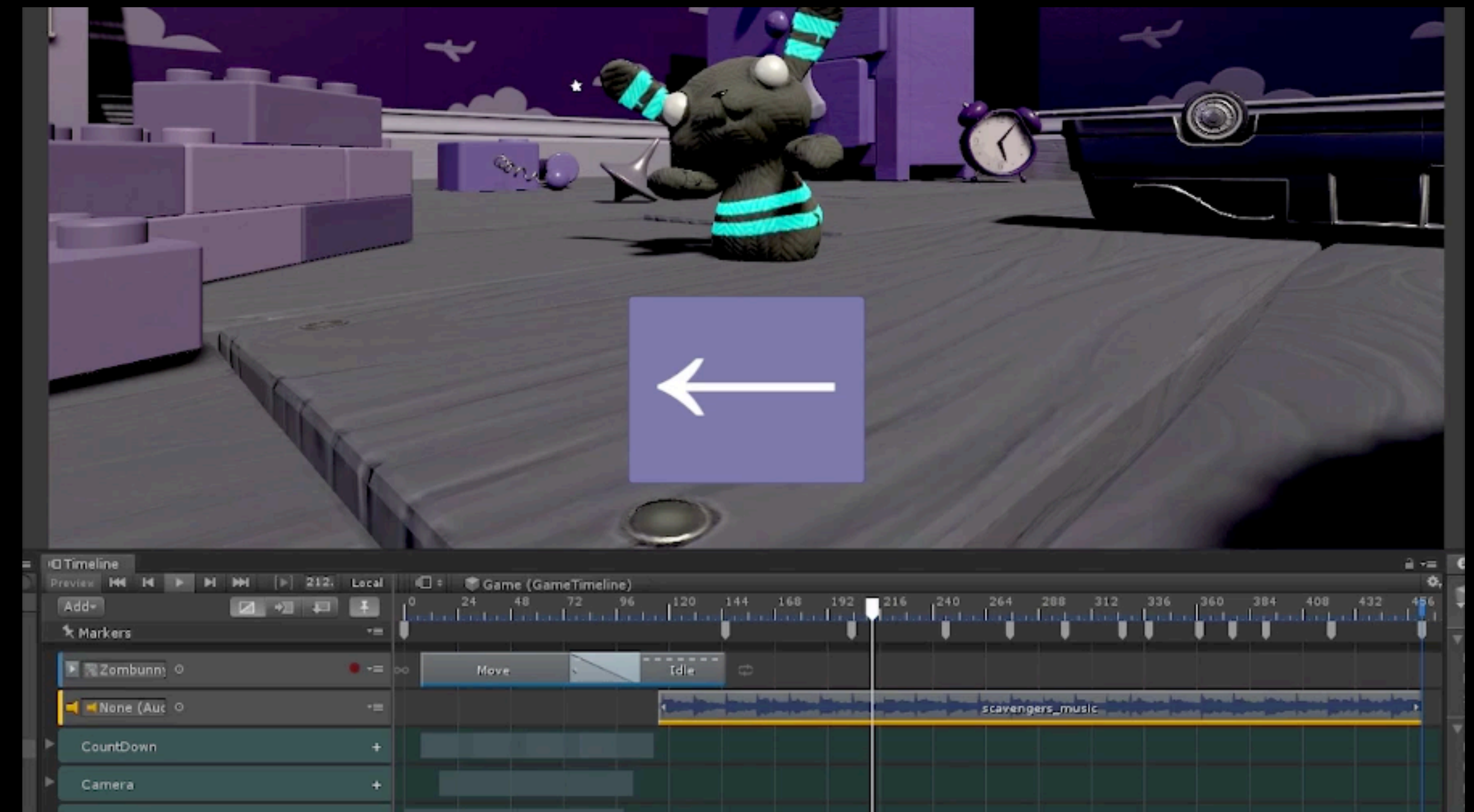
# Released

# Prerelease

# In Development

We introduced a simple visual interface to create and manage events for designers and artists using Timeline.

You can add signals and markers on any tracks to accurately define when events are sent in just a few clicks.





# Creative workflows.

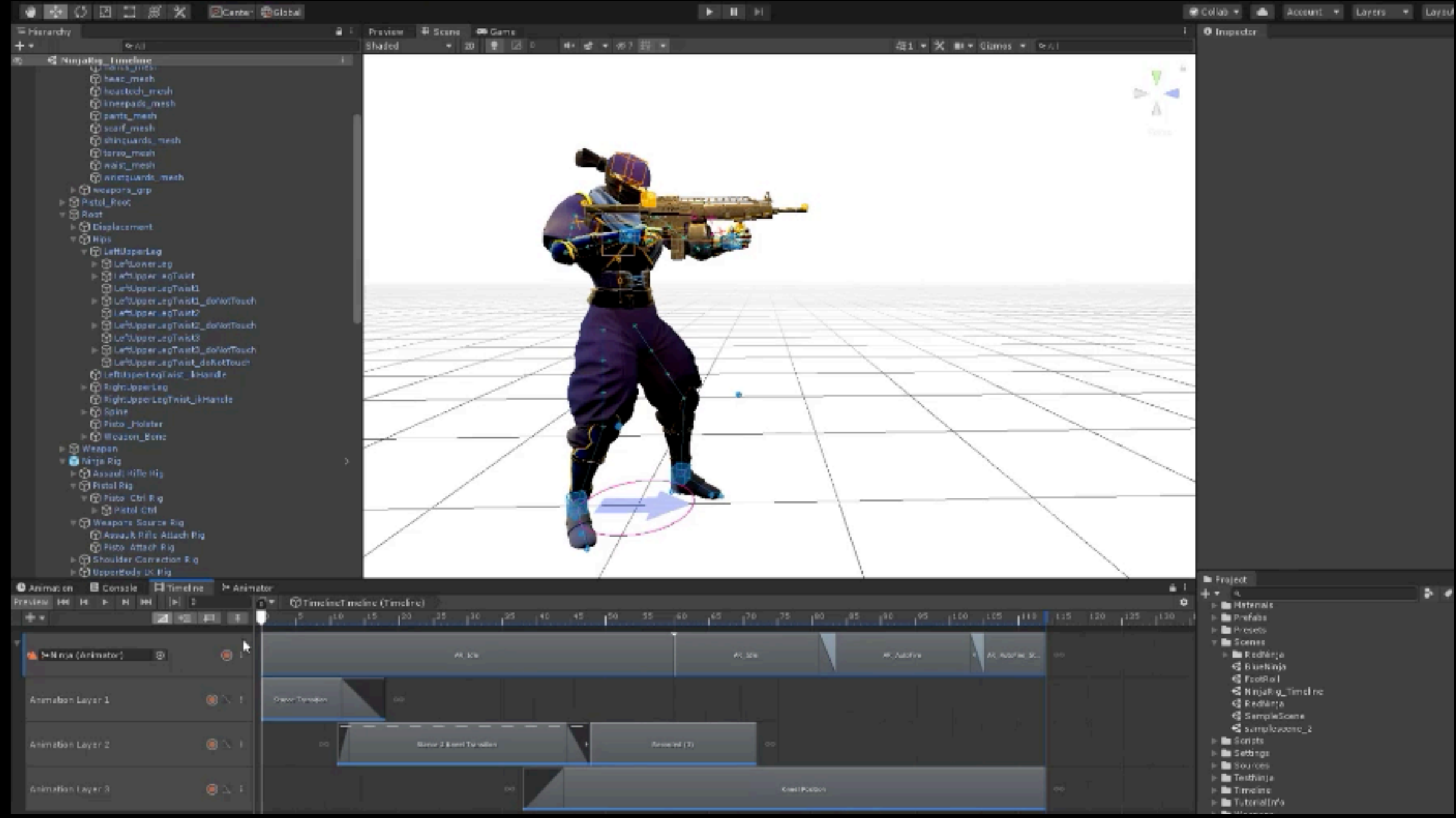
## Animation

Released

Prerelease

Before moving focus to DOTS Animation, we wanted to deploy a set of useful animation tools to improve the workflow of animators working in current tech.

With Animation Rigging, Keyframing Runtime Rig, and Kinematica you can create more effectively than ever before.





# e. Creative workflows. Scalable Quality. Re

## Animation

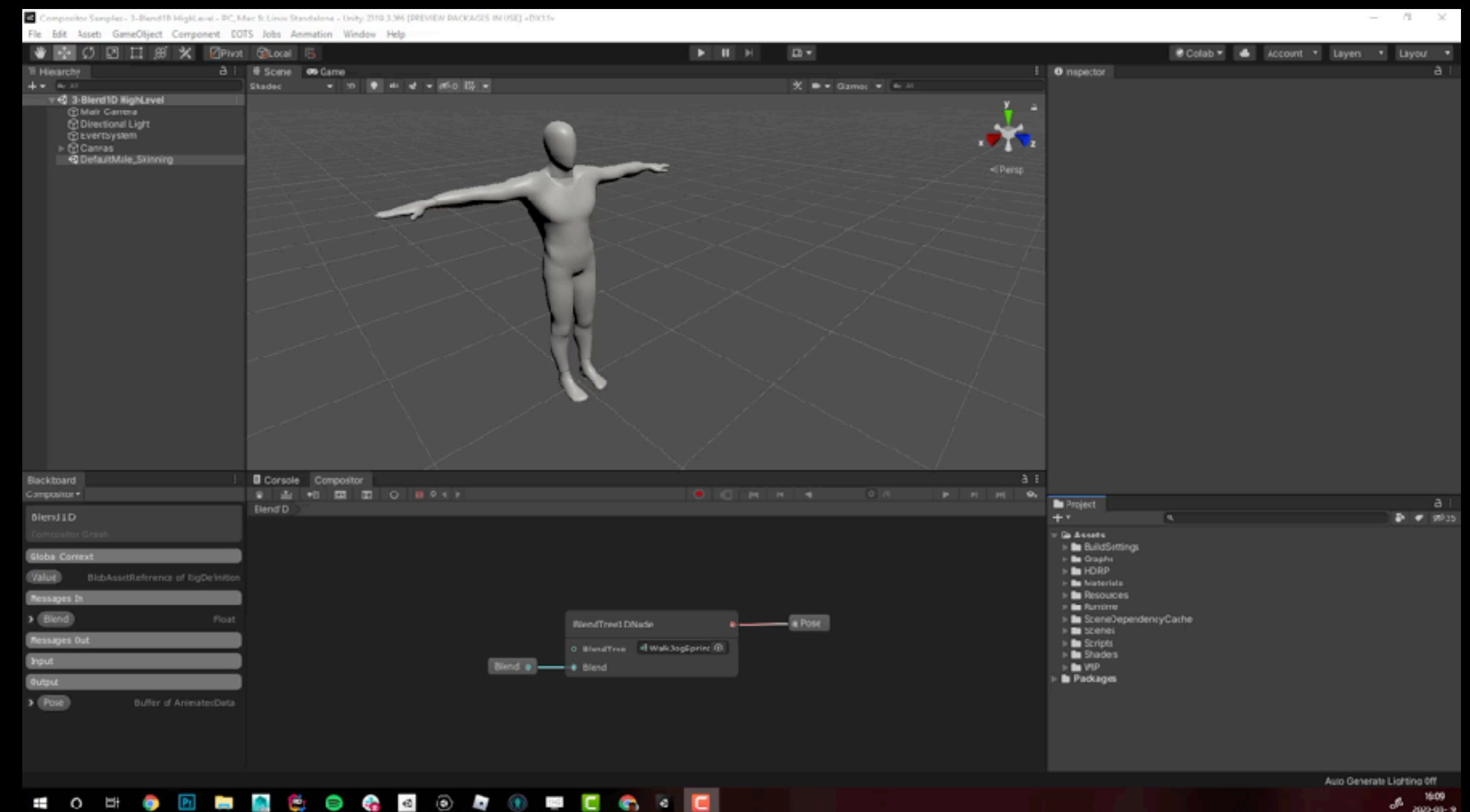
Released

Prerelease

In Development

The new DOTS Animation system is flexible, performant and easy to use. It is fully scriptable and built to adapt to a huge variety of use cases, from simple animation to AAA pipelines. After solidifying the DOTS Animation core, we will add tools to ease production and enable animation artists in their work.

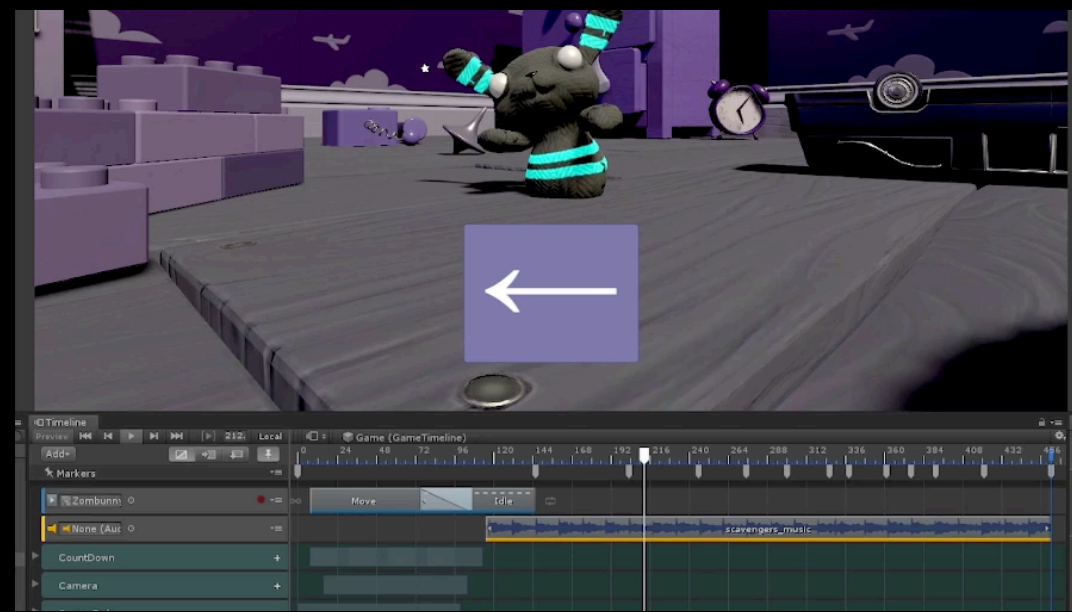
We aim to reduce the complexity of animation systems with intuitive workflows like animation graphs and hierarchical state machines. We will also add existing essential tools like Timeline and Kinematica to DOTS to provide artists with the same level of creative control they enjoy in the current tech.



# e. Creative workflows. Scalable Quality. Re

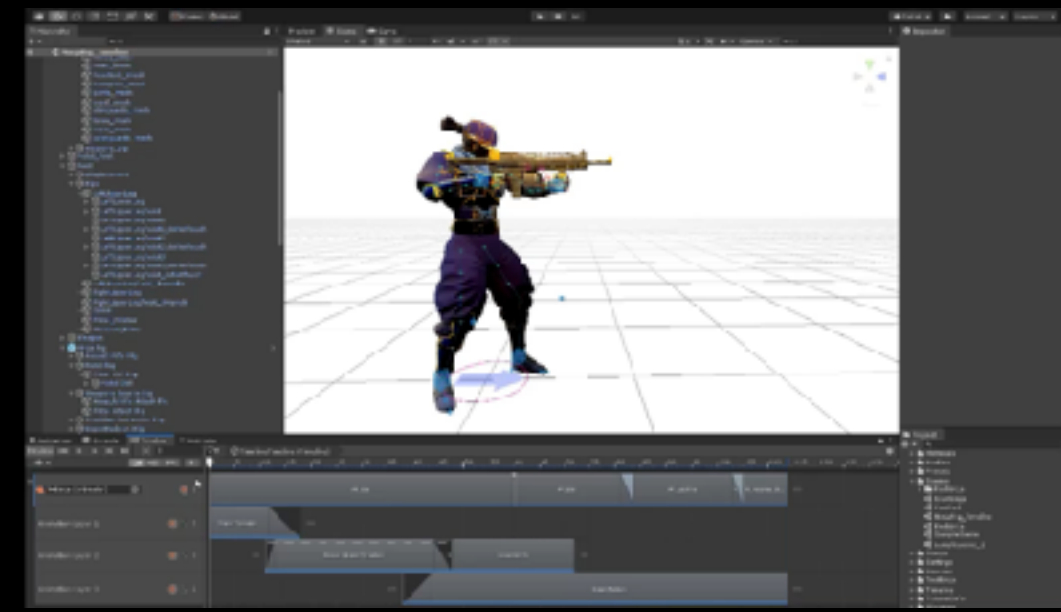
## Animation - highlights

Released



- Timeline signals and markers

Prerelease



- Animation Rigging
- Keyframing runtime rig
- Kinematica

In Development



- DOTS Animation system
- DOTS Animation Graph
- DOTS Animation State Machine
- DOTS Timeline



e. **Creative workflows.** Scalable Quality. Re

## Lighting

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### The Mission

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**Empower you to create best-in-class  
lighting in your games efficiently and  
effortlessly.**



e. **Creative workflows.** Scalable Quality. Re

**Lighting**

**Released**

**Prerelease**

**In Development**



Broad improvements to HDRP precomputed lighting as well as more control of light shapes and usability improvements for Light Probes



Many usability improvements as well as bake quality upgrades



A big push on our GPU Lightmapper as well as work on adaptive sampling



# e. Creative workflows. Scalable Quality. Re

## Lighting

### Released

### Prerelease

### In Development

Unity 2019.3 greatly improves the High Definition Render Pipeline support for precomputed lighting. Spotlights were improved and new Box/Pyramid light shapes were added to the lighting toolbox.

The release also adds significant performance improvements for Scenes with many lights. Usability for Light Probes was also improved with better exposure for Previews and settings for improving the quality in Scenes with difficult lighting.





# e. Creative workflows. Scalable Quality. Re

## Lighting

Released

Prerelease

In Development

Unity 2020.1 beta greatly improves usability for lighting your creations. The addition of a separate Lighting Settings Asset allows you to reuse settings across your Scenes.

We added Overlap-free Packing and a new Scene View mode for verifying your setup, which makes it easier to get a great lighting result.

Performance and quality have also been improved adding Cookie/IES light emitter support and many more GPU Lightmapper features.





# e. Creative workflows. Scalable Quality. Re

## Lighting

Released

Prerelease

In Development

GPU Lightmapper greatly improves lighting iteration times as well as production bakes. Development to make it production ready is in progress.

Another great leap in usability is providing Scene-independent presets making it much easier to set up lighting—this is made possible by developing adaptive sampling for the global illumination backend.





# e. Creative workflows. Scalable Quality. Re

## Lighting - highlights

### Released



- HDRP light shapes support (Box spotlight, Pyramid spotlight) and inner cone angle for spot lights
- Improved direct sampling
- Flexible sample counts for probes
- Scene View exposure controls
- AMD Radeon Pro Denoiser
- Light Probe merging
- Submesh support for GPU Lightmapper

### Prerelease



- Lighting Settings Asset
- Overlap-free packing
- Scene View mode for debugging precomputed lighting
- Cookie/IES support
- Improved sampling
- Russian Roulette
- GPU Lightmapper feature complete

### In Development



- GPU Lightmapper - Out of Preview
- Adaptive sampling
- Scene-independent lighting presets
- Blue Noise sampling
- Light grid improvements
- DOTS support for global illumination backend



e. **Creative workflows.** Scalable Quality. Re

**World-building**

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The Mission

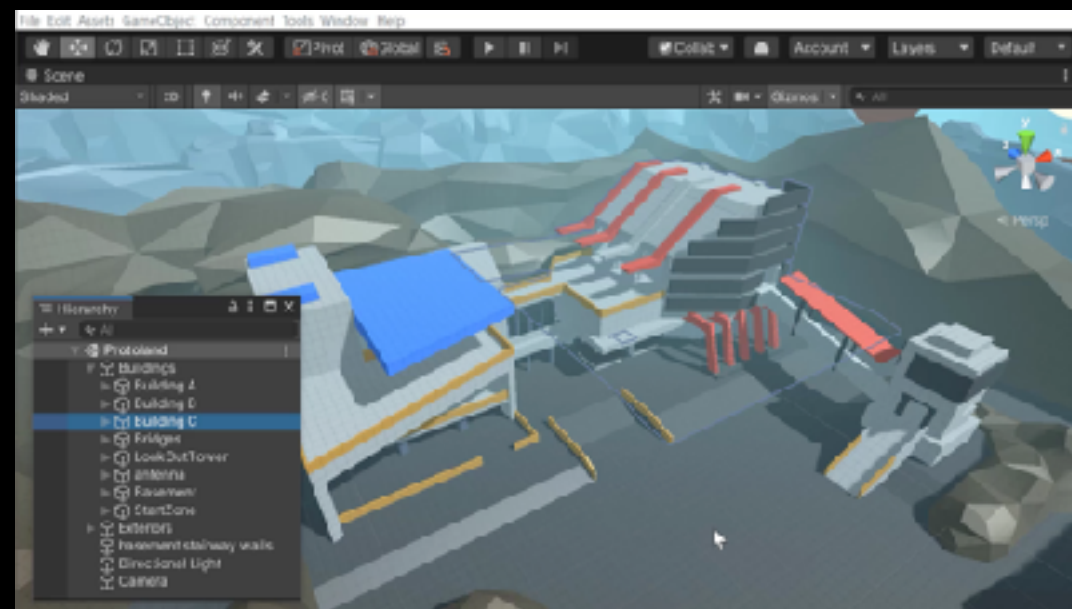
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**Empower designers and artists in Unity  
by providing a robust unified  
foundation and create the next  
generation of 3D world-building tools.**

# e. Creative workflows. Scalable Quality. Re

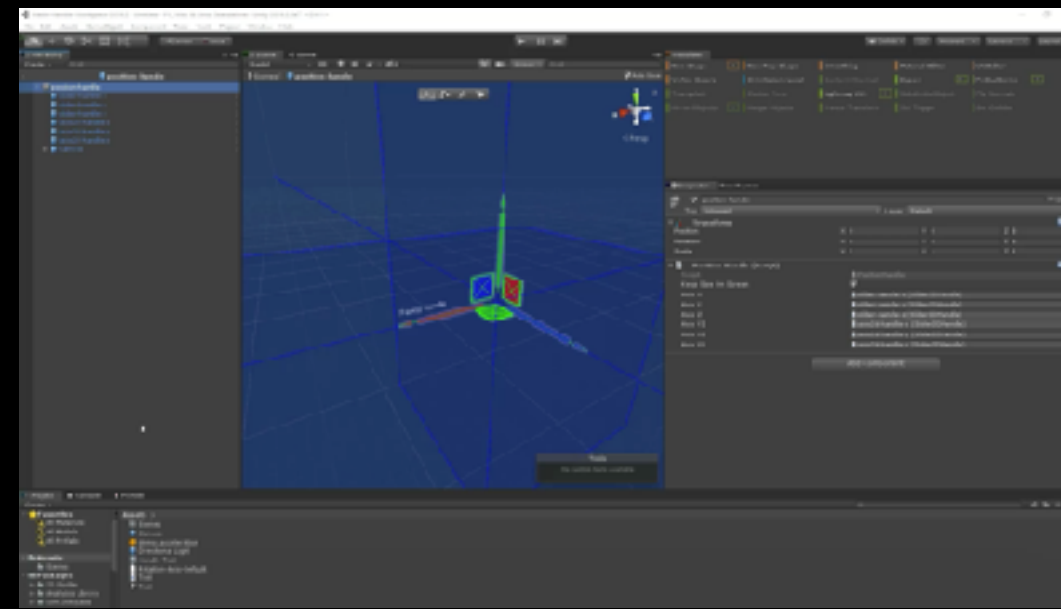
## World-building

Released



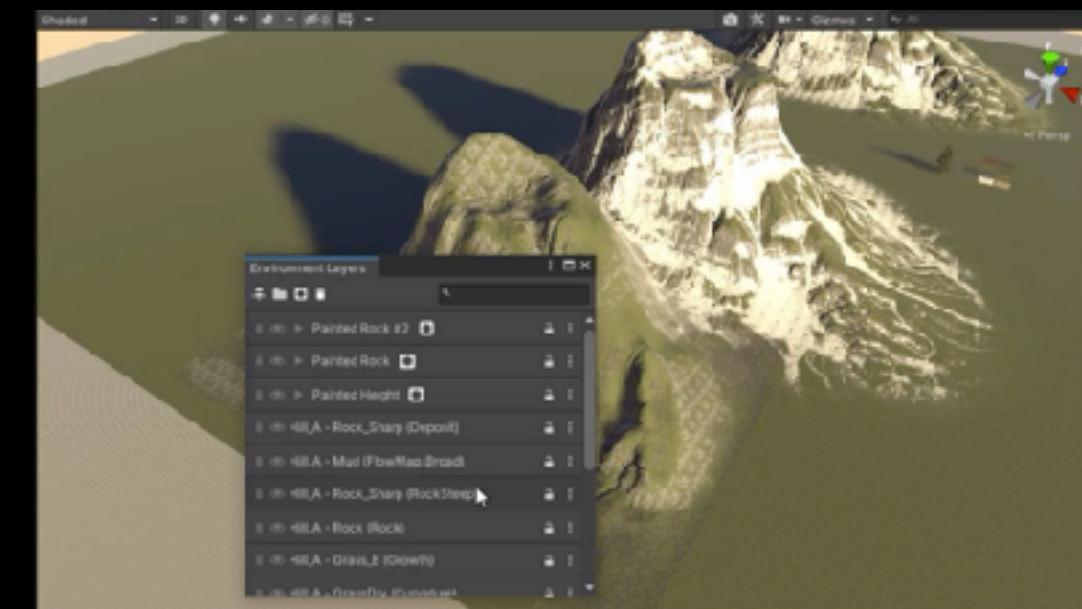
New tools were added to enable 3D mesh authoring in Unity. We also improved Scene-editing and environment-authoring workflows.

Prerelease



Create foundation APIs and generic tools that can be shared across Unity to enable consistent authoring workflows.

In Development



First we are going to improve selection, manipulation, placement and grid tools for efficient and intuitive Scene authoring. Then we are going to add more advanced features In ProBuilder and the Environment system.



# e. Creative workflows. Scalable Quality. Re

## World-building

Released

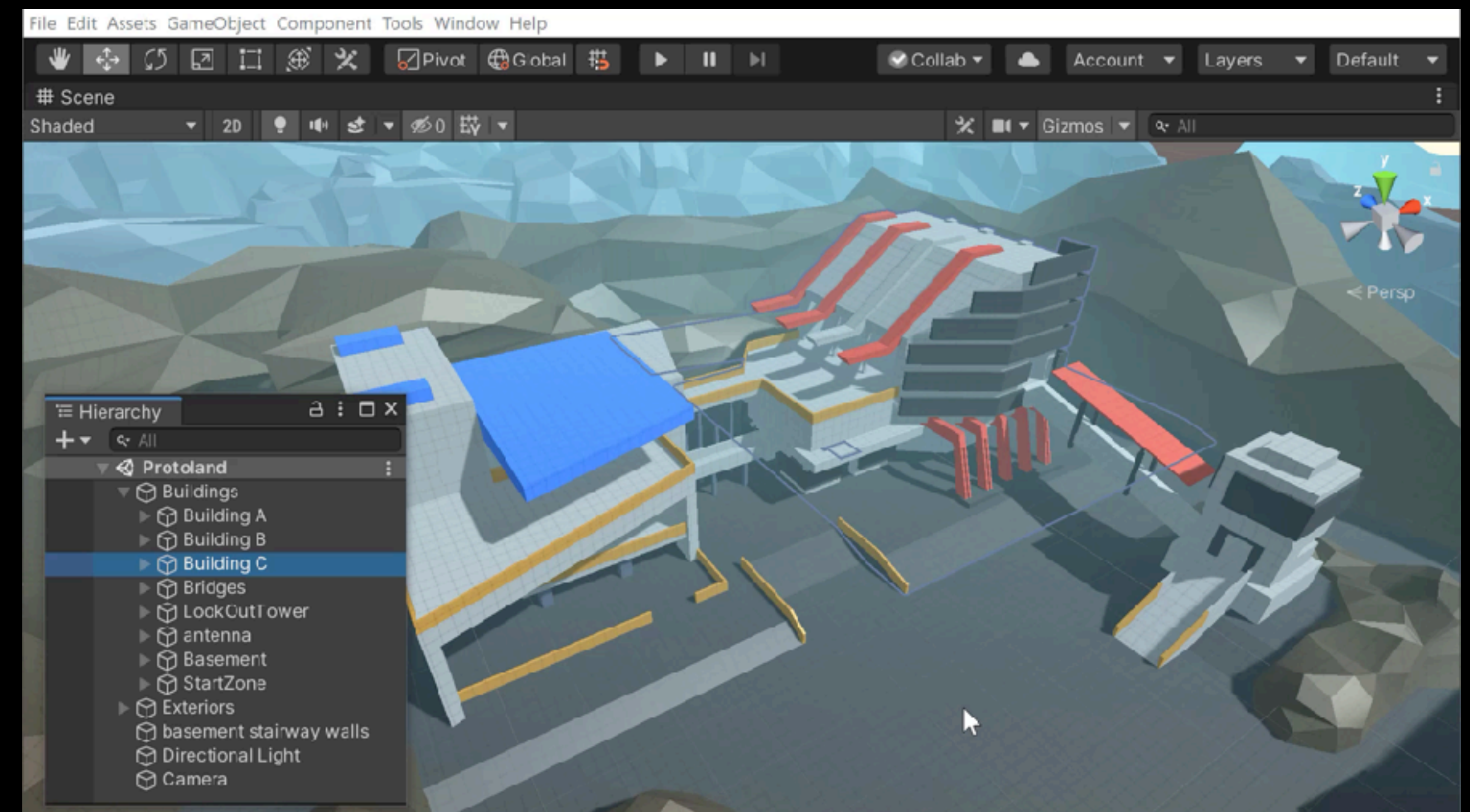
Prerelease

In Development

We accelerated the work of level designers and artists by providing basic in-engine 3D mesh authoring with ProBuilder and Polybrush to reduce context switching.

To bring immediate improvement to authoring terrain, we've made a terrain tools package with brand new sculpting tools and a collection of common-use utilities to help automate tedious tasks.

Then before moving to more advanced authoring features, we improved the Unity Editor to make it a better environment for asset creation through better control of Scene visibility, Scene locks and improved grids.



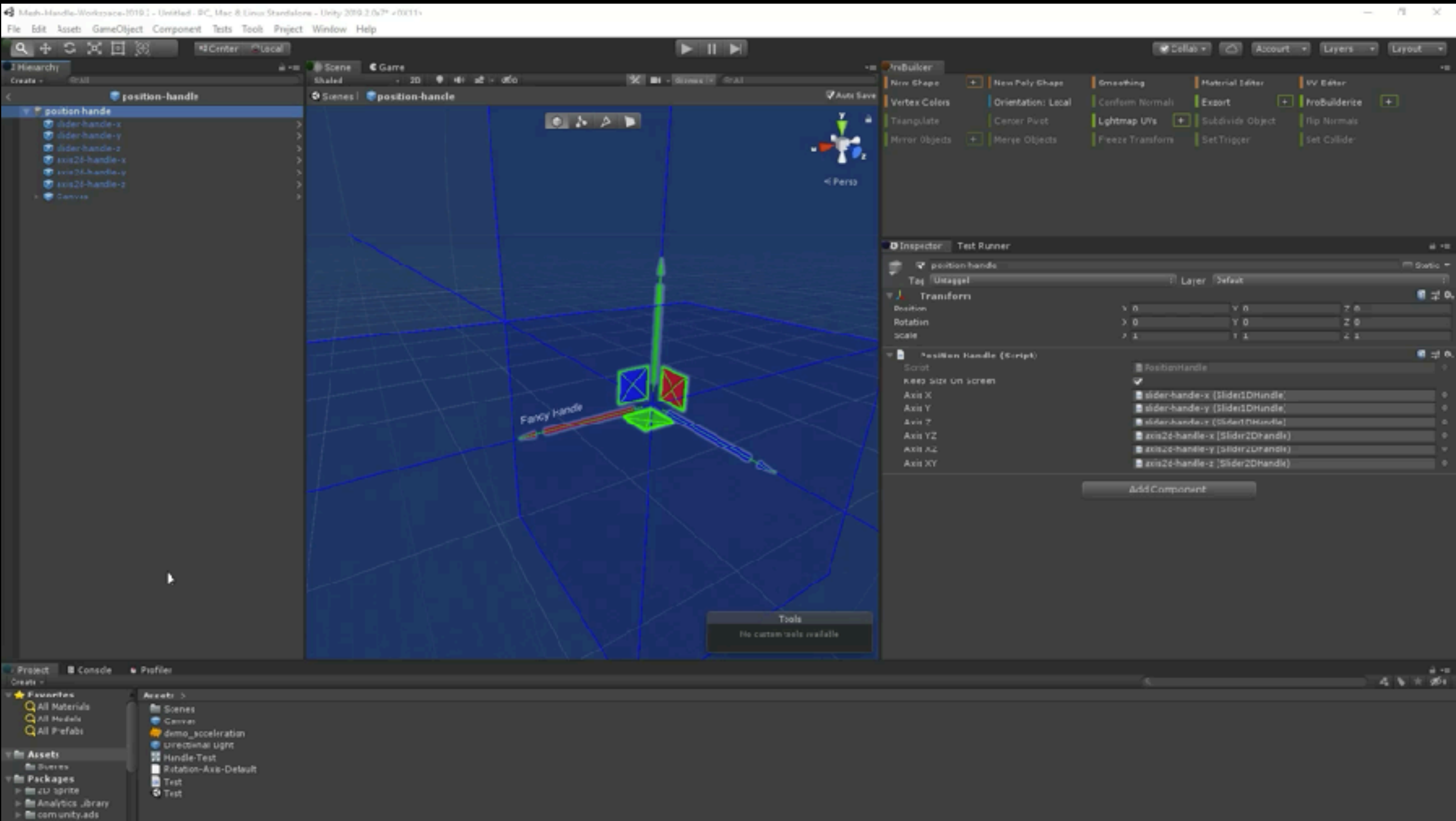
# e. Creative workflows. Scalable Quality. Re

## World-building

Released      Prerelease      In Development

We want to create a seamless experience when you navigate the different World-building tools in Unity.

Once learned, patterns and behaviors should be consistent across all features. We are building the foundation APIs to share across Unity like we do with Prefab handles.





# e. Creative workflows. Scalable Quality. Re

## World-building

Released

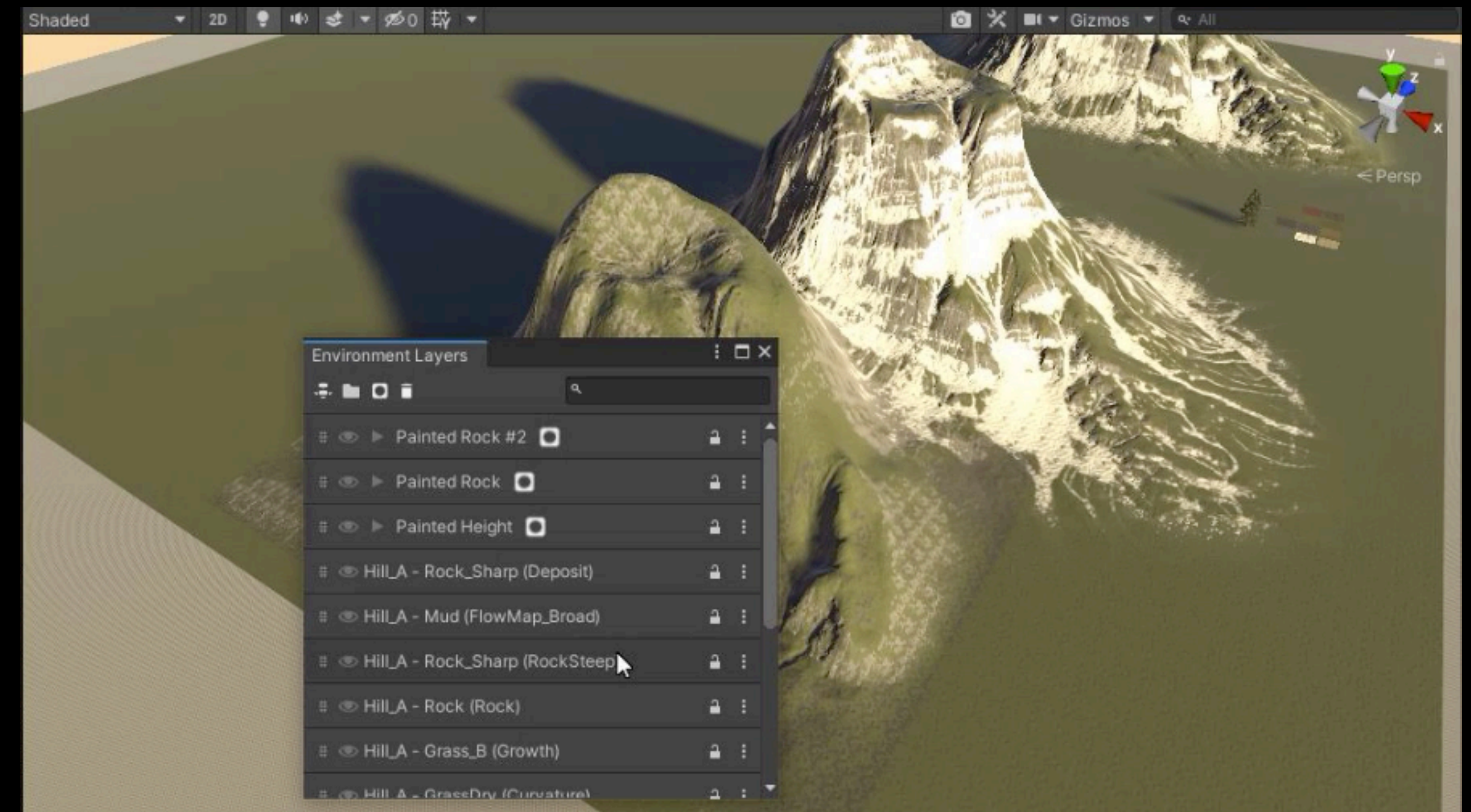
Prerelease

In Development

We need to make sure that the essential actions are truly efficient and intuitive, so we are going to improve the selection, manipulation, placement grid and window tools that you are using hundreds of times a day.

We are also working on a new C#-based Environment system that will have a non-destructive layer-based workflow.

Then we are going to add more advanced features to ProBuilder and Polybrush to make Unity a go-to solution for common modeling needs.





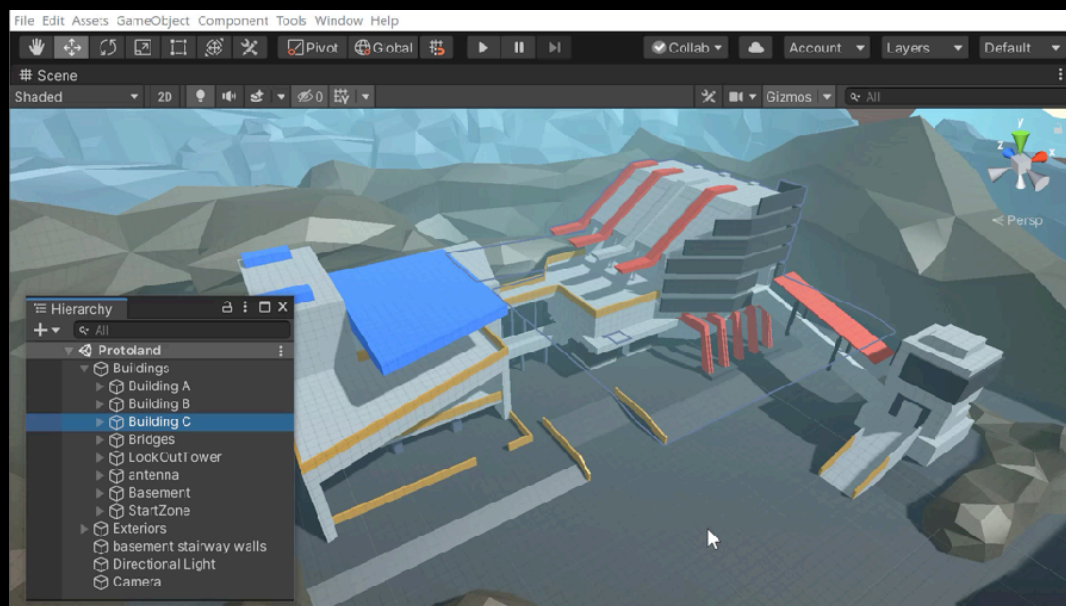
# e. Creative workflows. Scalable Quality. Re

## World-building - highlights

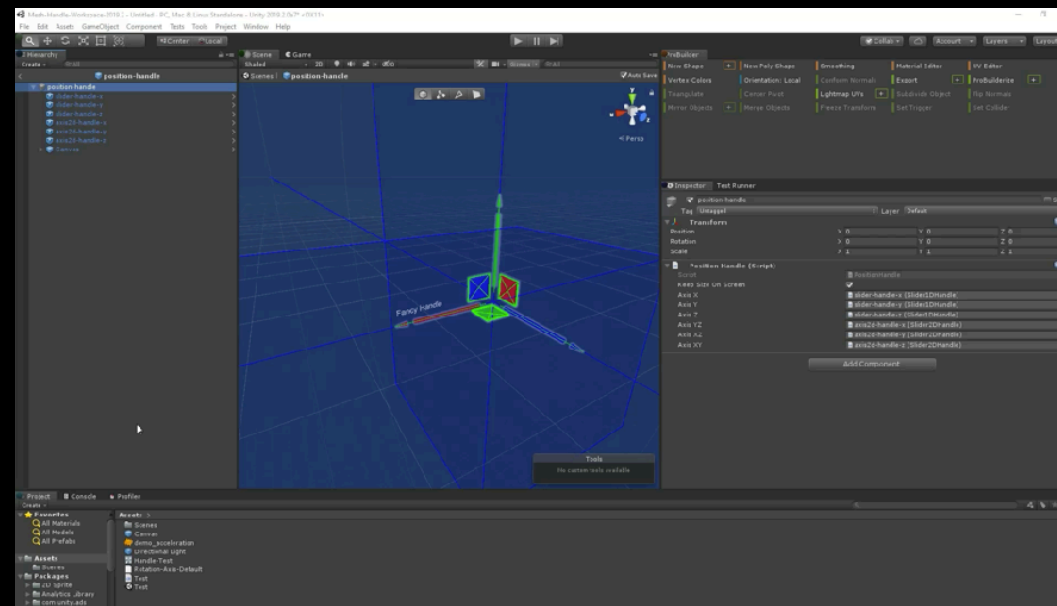
Released

Prerelease

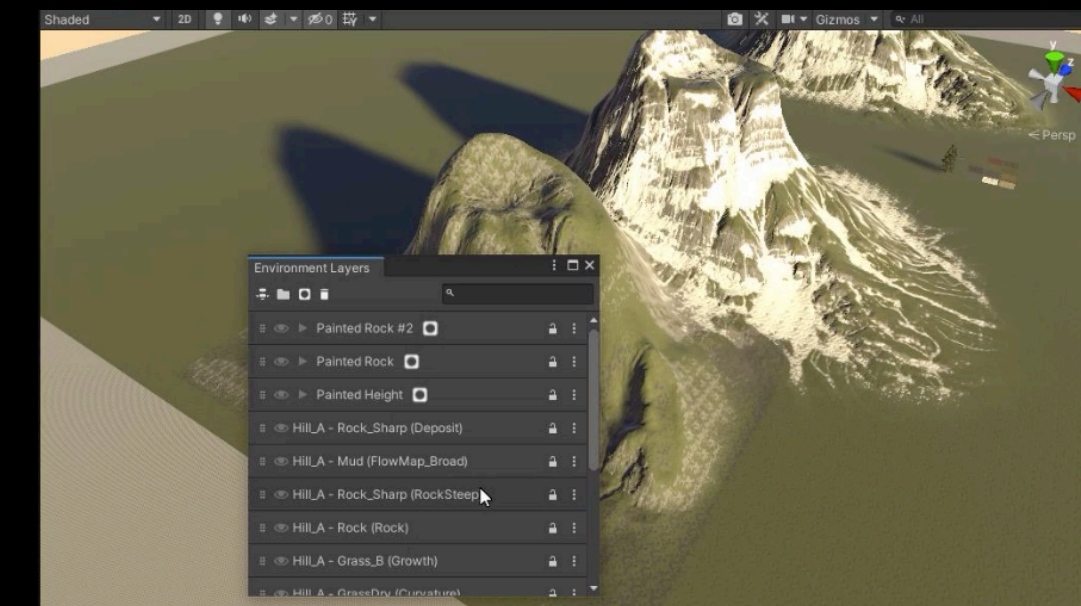
In Development



- ProBuilder 4.0
- Polybrush 1.0
- Scene visibility
- Scene lock
- Improved grids
- Terrain brushes
- Terrain holes



- Prefab handles
- ProBuilder 4.3



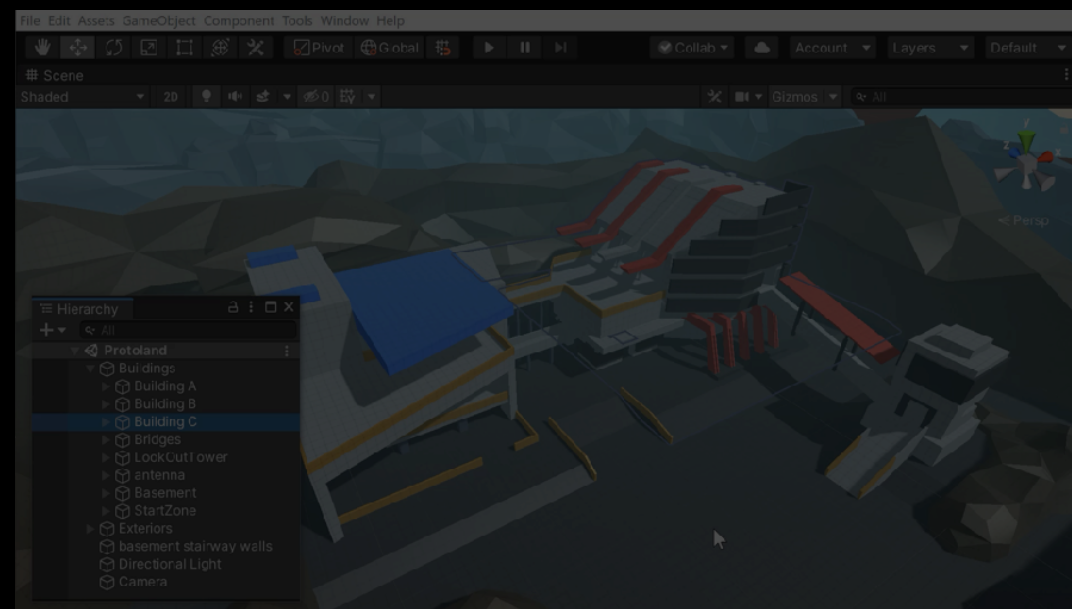
- New Environment System
- Unified spline and brushes
- Customizable toolbars and windows
- Snap, align and position improvements



# e. Creative workflows. Scalable Quality. Re

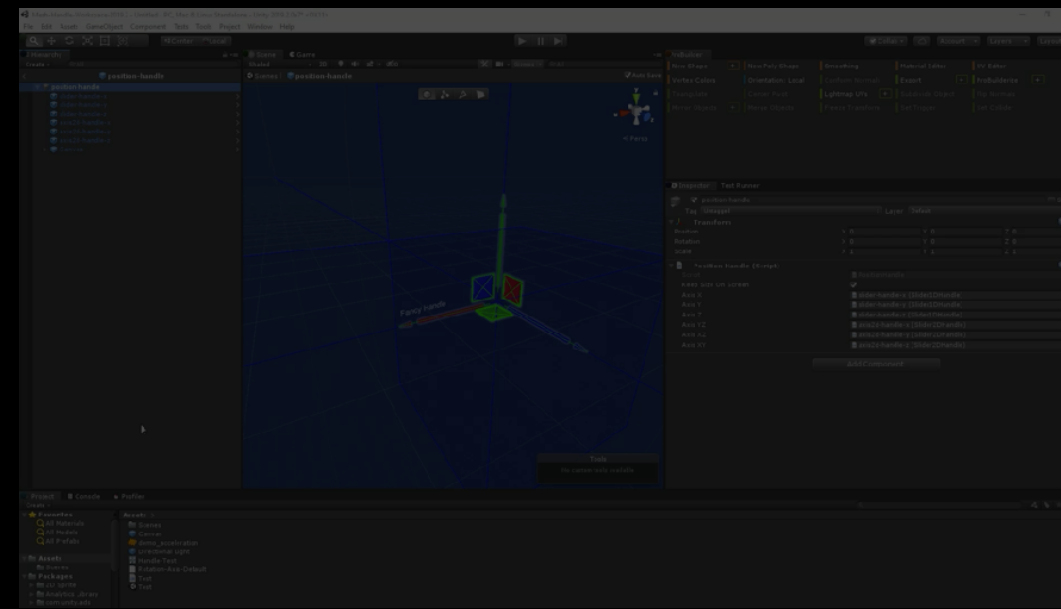
## World-building - highlights

### Released



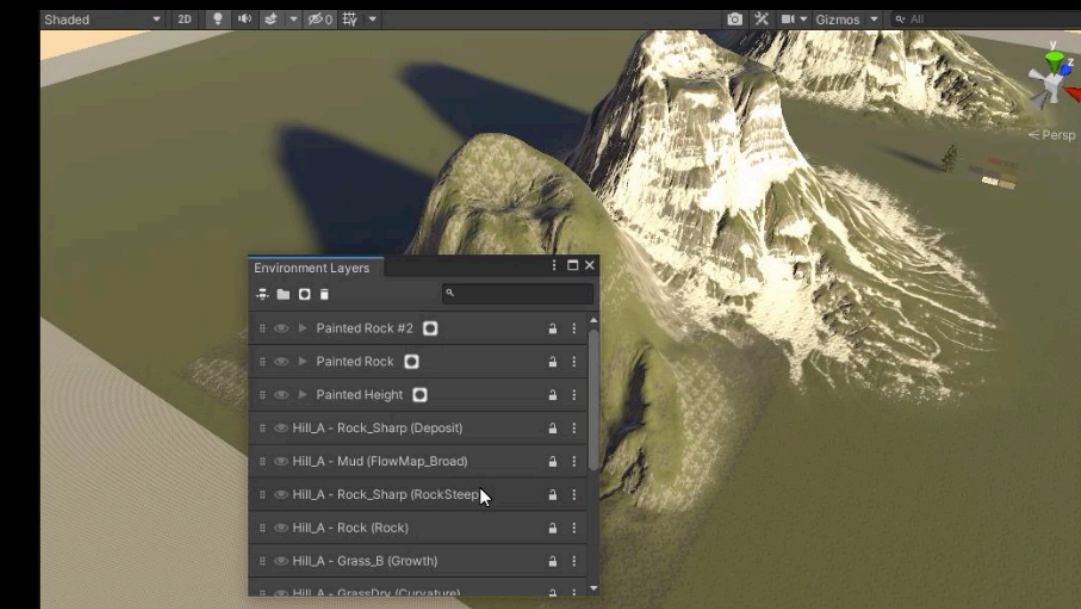
- ProBuilder 4.0
- Polybrush 1.0
- Scene visibility
- Scene lock
- Improved grids
- Terrain brushes.
- Terrain holes

### Prerelease

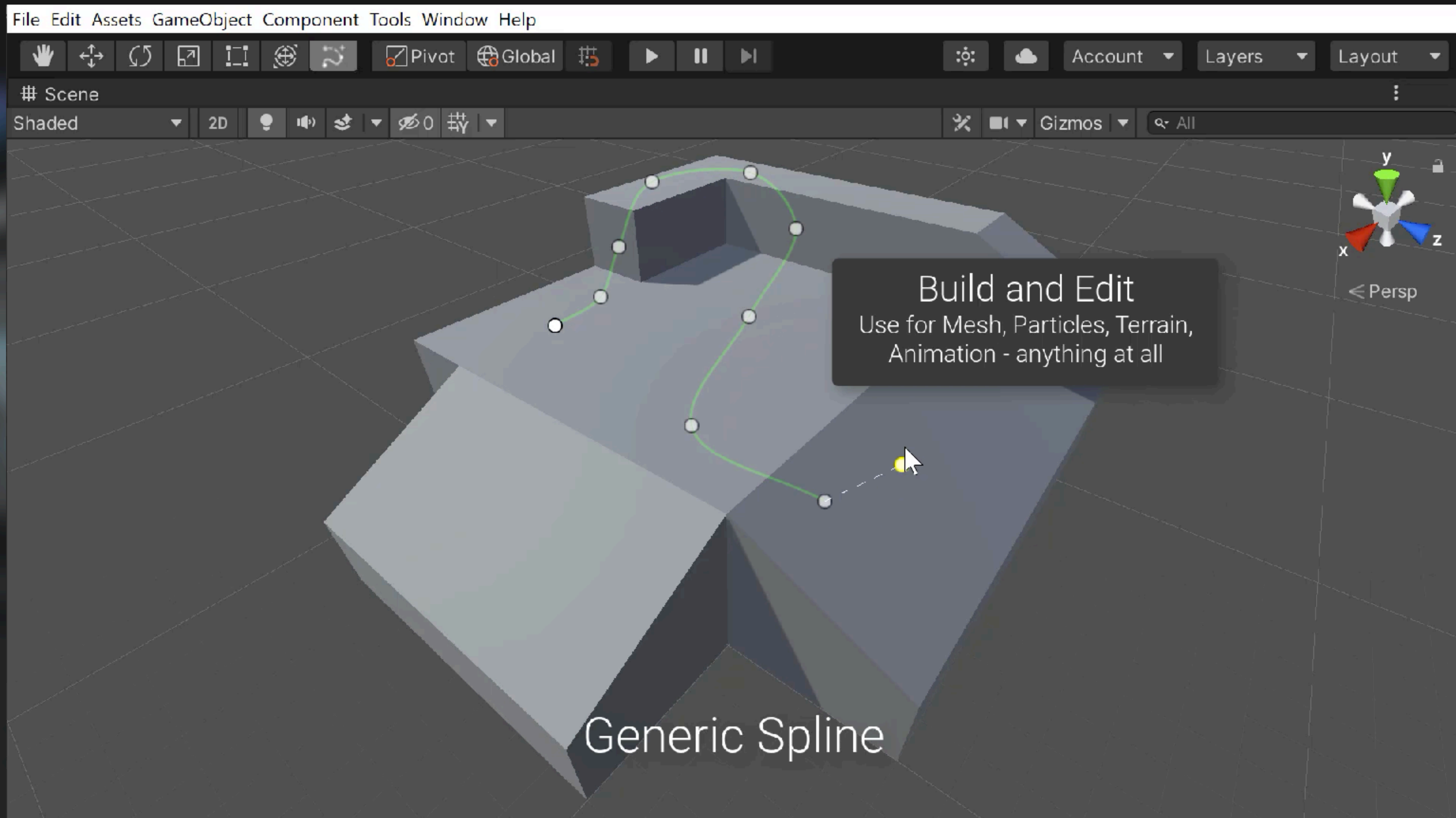


- Prefab handles.
- ProBuilder 4.3.

### In Development



- New Environment System
- Unified spline and brushes
- Customizable toolbars and windows.
- Snap, align and position improvements





e. **Creative workflows.** Scalable Quality. Re

## Visual Effects

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### The Mission

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**Create shaders and real-time VFX  
without needing to write code**

# e. Creative workflows. Scalable Quality. Re

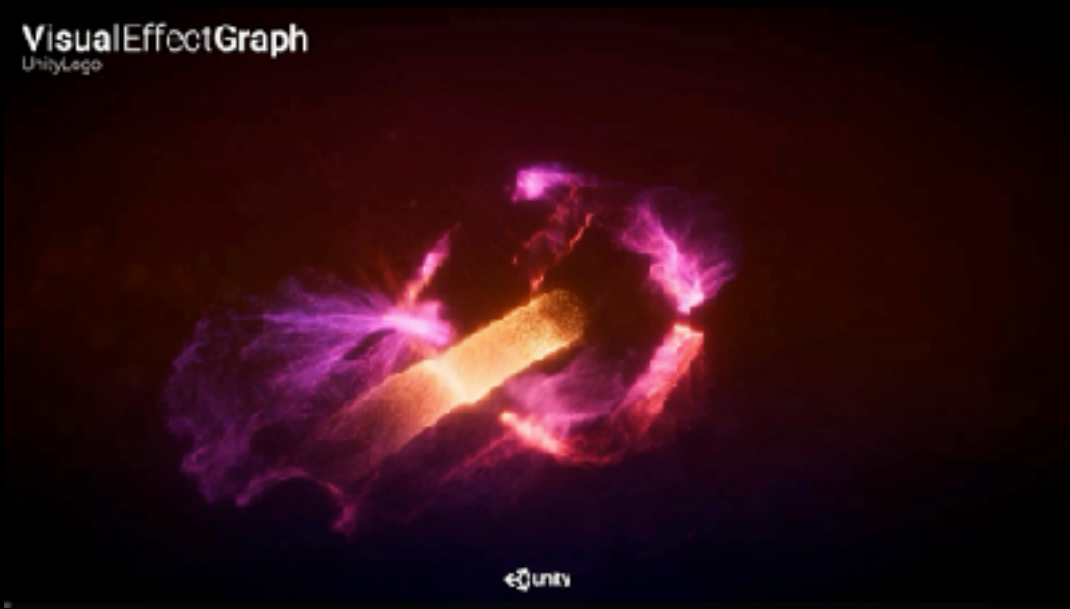
## Visual Effects

Released



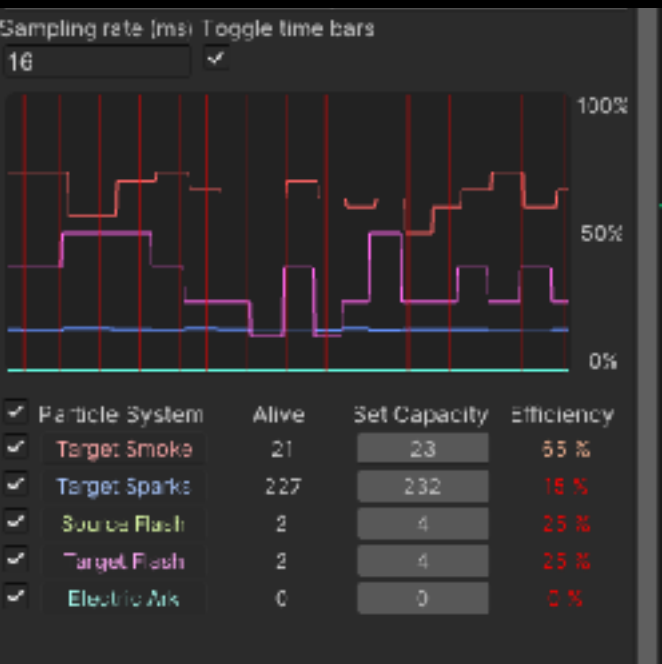
Use Shader graphs inside your visual effects, and with Visual Effect Graph out of Preview, benefit from a consistent upgrade path.

Prerelease



Focus entirely on stabilization and bug-fixing in our current Prerelease offerings.

In Development



Far broader extensibility with C# API for our effects systems.





# e. Creative workflows. Scalable Quality. Re

## Visual Effects

Released

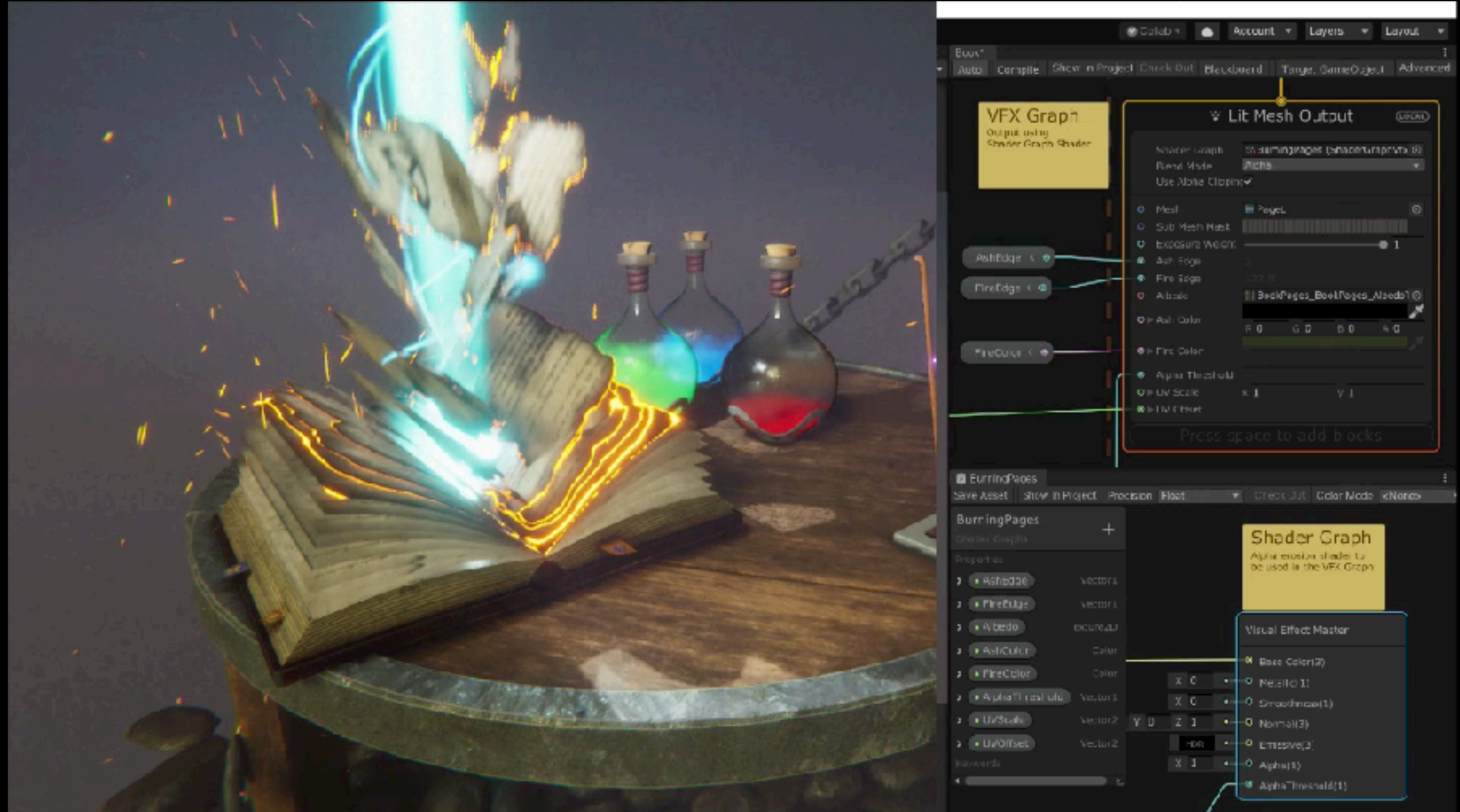
Prerelease

In Development

With 2019.3, version 7.2.0 of the Visual Effect Graph package is now out of Preview. That means we guarantee stability, platform support and upgrade path.

You will be able to migrate your project data and code to future Visual Effect Graph versions safely, and we will continue to develop and extend these features.

There's initial support for Visual Effect Graph and Shader Graph integration - letting you use Shader Graph shaders for your visual effects.





# e. Creative workflows. Scalable Quality. Re

## Visual Effects

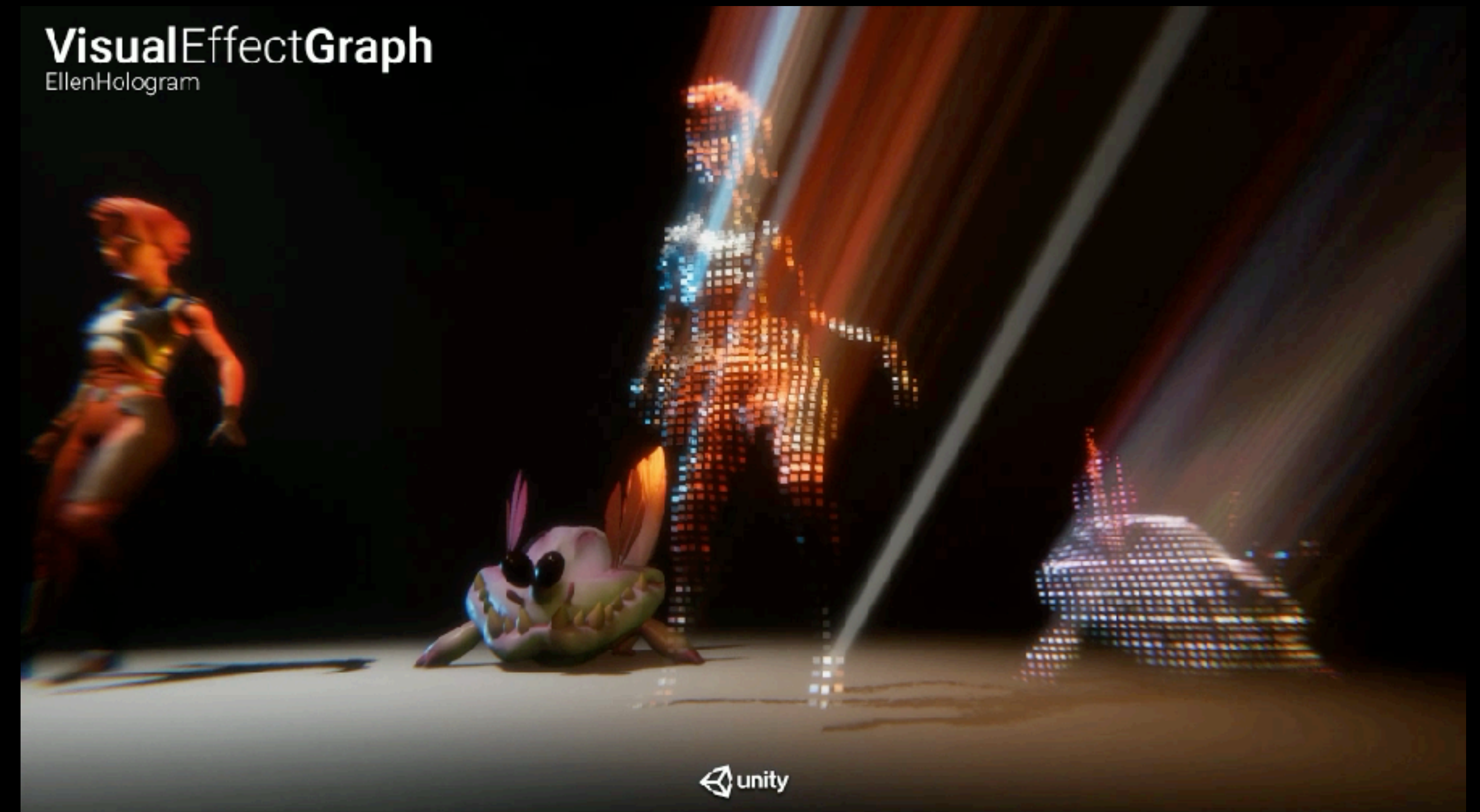
Released

Prerelease

In Development

Our current Prerelease offerings are focused on stabilization and bug fixes, tackling all the feedback we've received from you.

One highlight is that we have cut shader load times by around 50% as of Unity 2020.1







e. **Creative workflows.** Scalable Quality. Re

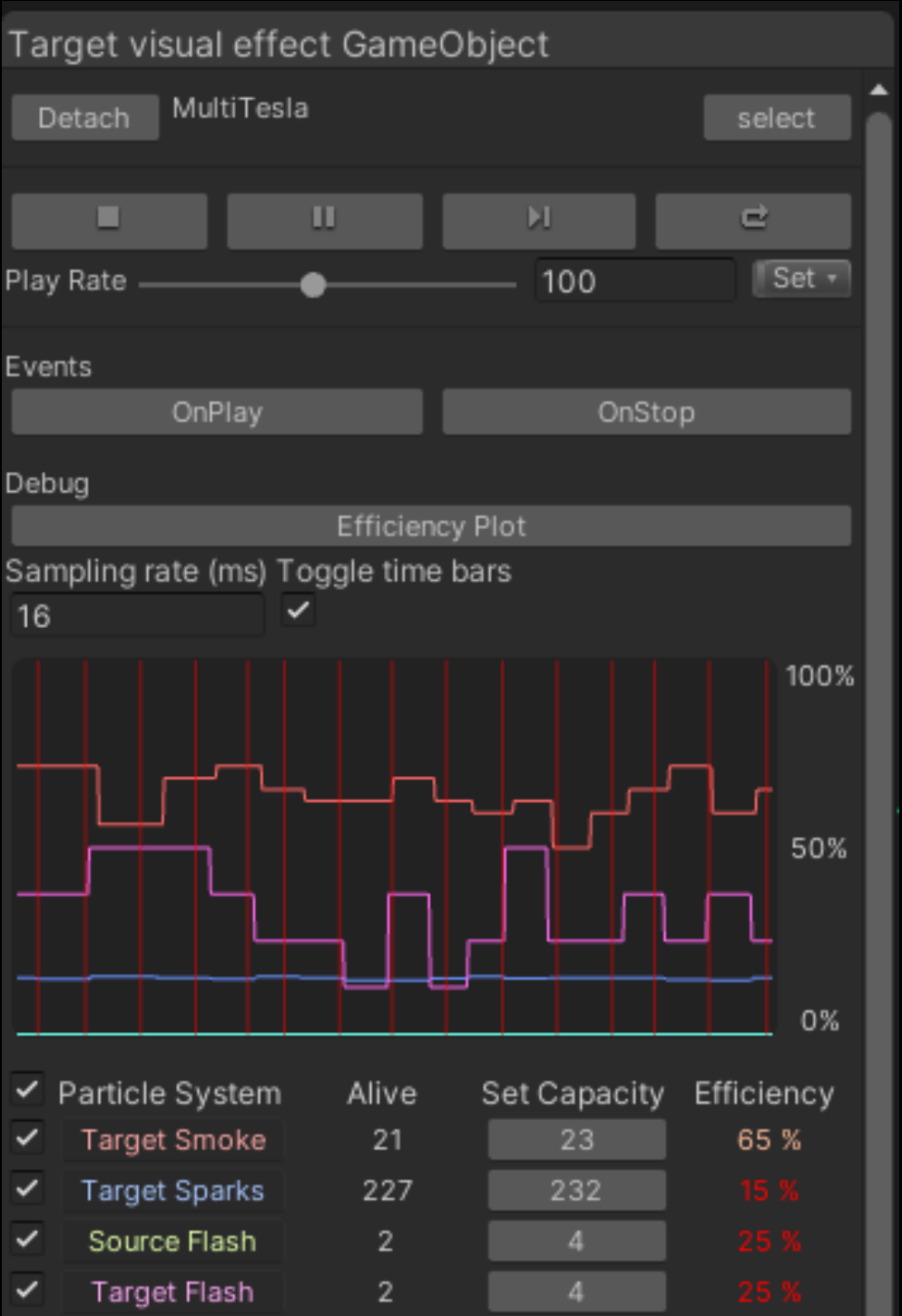
Visual Effects

Released

Prerelease

In Development

We’re working towards greater extensibility of effects systems; our goal is to provide public C# APIs for these features.



# Creative workflows. Scalable Quality. Re

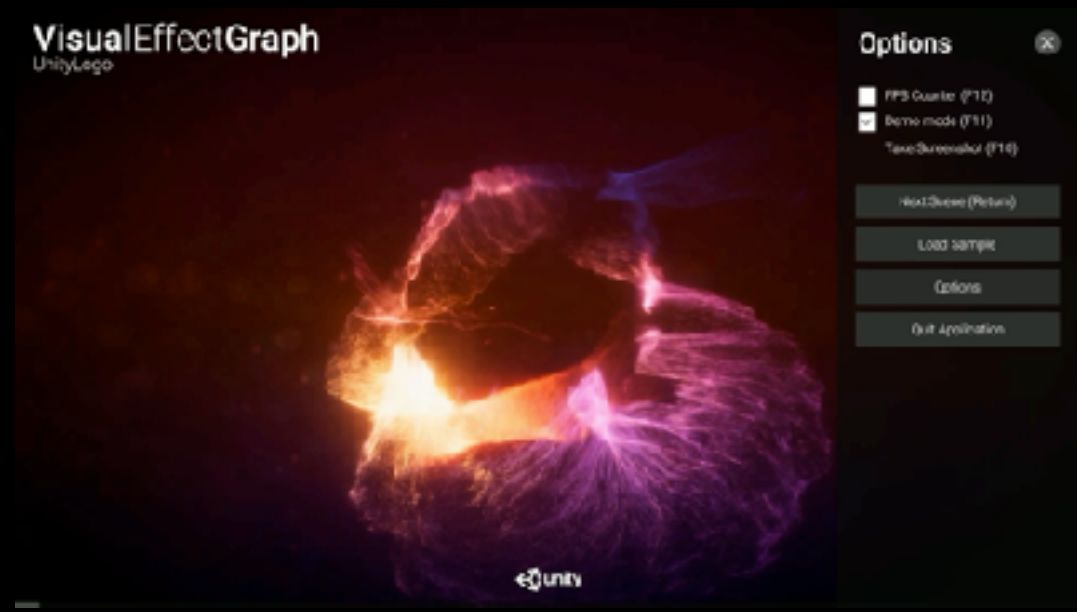
## Visual Effects - highlights

### Released



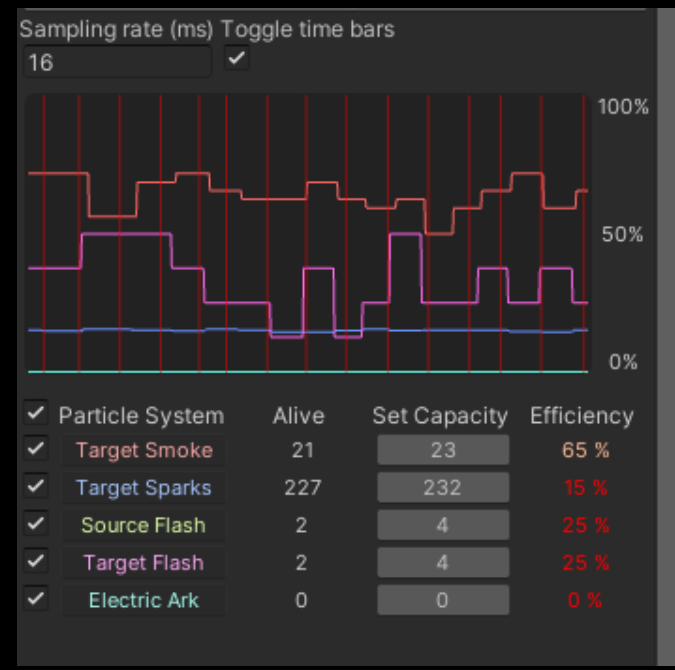
- Shader load time reduced by ~40% (2019.3)
- Use Shader Graph shaders in VFX Graph
- Shader Graph
  - Render State Settings per material
  - Shader LOD (keyword switch node)
  - HDRP DXR Subshader Switch
- VFX Graph
  - Particle Strips (Trails)
  - Motion Vectors
  - Per Spawn Time / Loop / Delay

### Prerelease



- Shader loading time reduced by ~50% (2020.1)
- Stabilization and bug focused release.

### In Development



- Shader Graph
  - Cross Pipeline workflows
  - Splitting Shader Graph Output into Stage Blocks
  - Custom Material Inspectors for Graphs
  - Extensibility Through Injection Points, Overrides, and Custom Output Targets
- VFX Graph
  - Foundational work for public API
  - Debugging tools & Mesh sampling



e. **Creative workflows.** Scalable Quality. Re

## UI Development

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### The Mission

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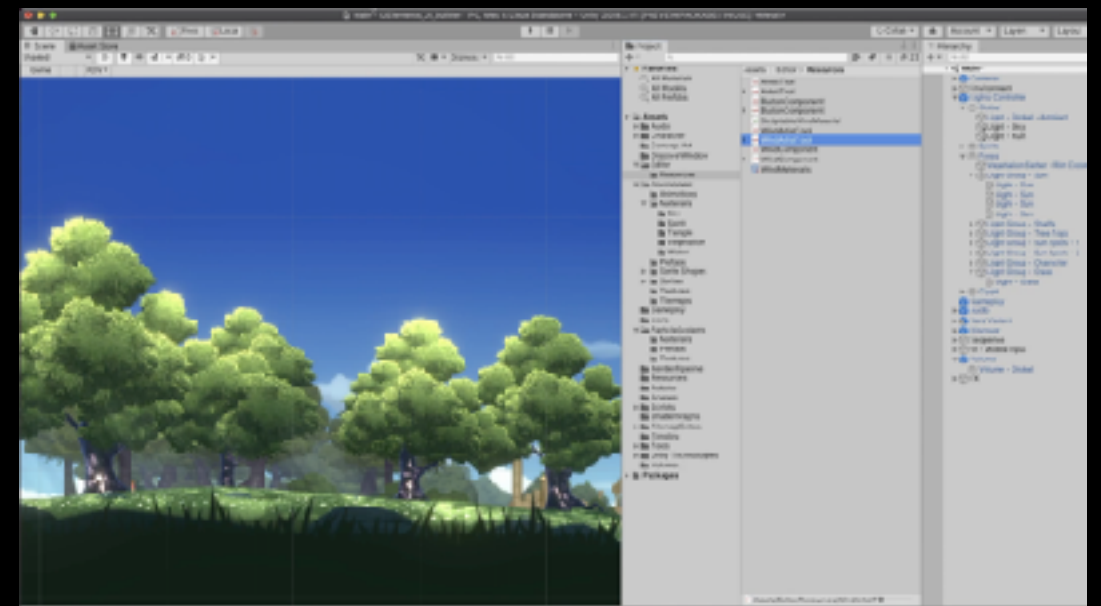
**Provide a unified framework to design and develop UI for the Unity Editor and runtime applications**



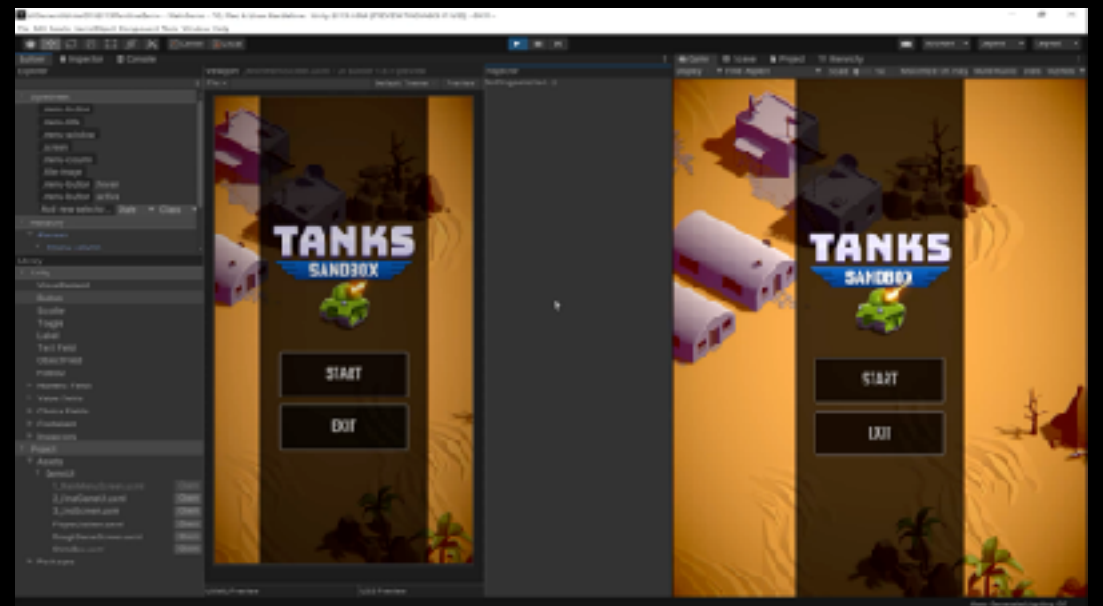
e. **Creative workflows.** Scalable Quality. Re

**UI Development**

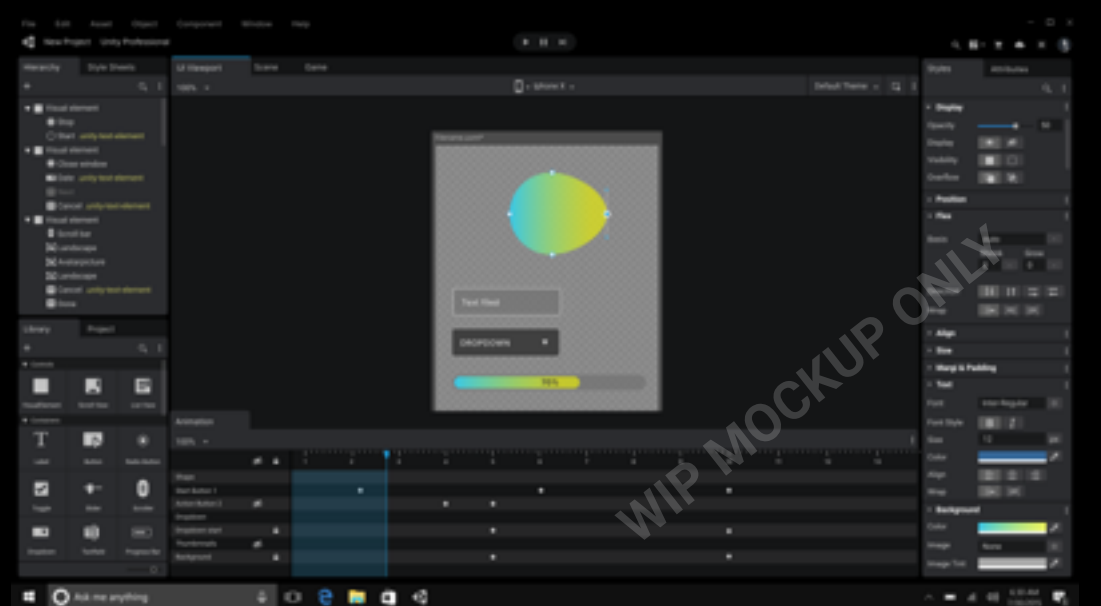
———— Released ————— Prerelease ..... In Development .....



A new UI Toolkit that makes it easier to collaborate on Editor tools and custom inspectors.



Visual authoring workflows that make it easy for content creators to build game and application UI.



Ability to easily create highly dynamic user interfaces for both screen and world space.



# e. Creative workflows. Scalable Quality. Re

## UI Development

Released

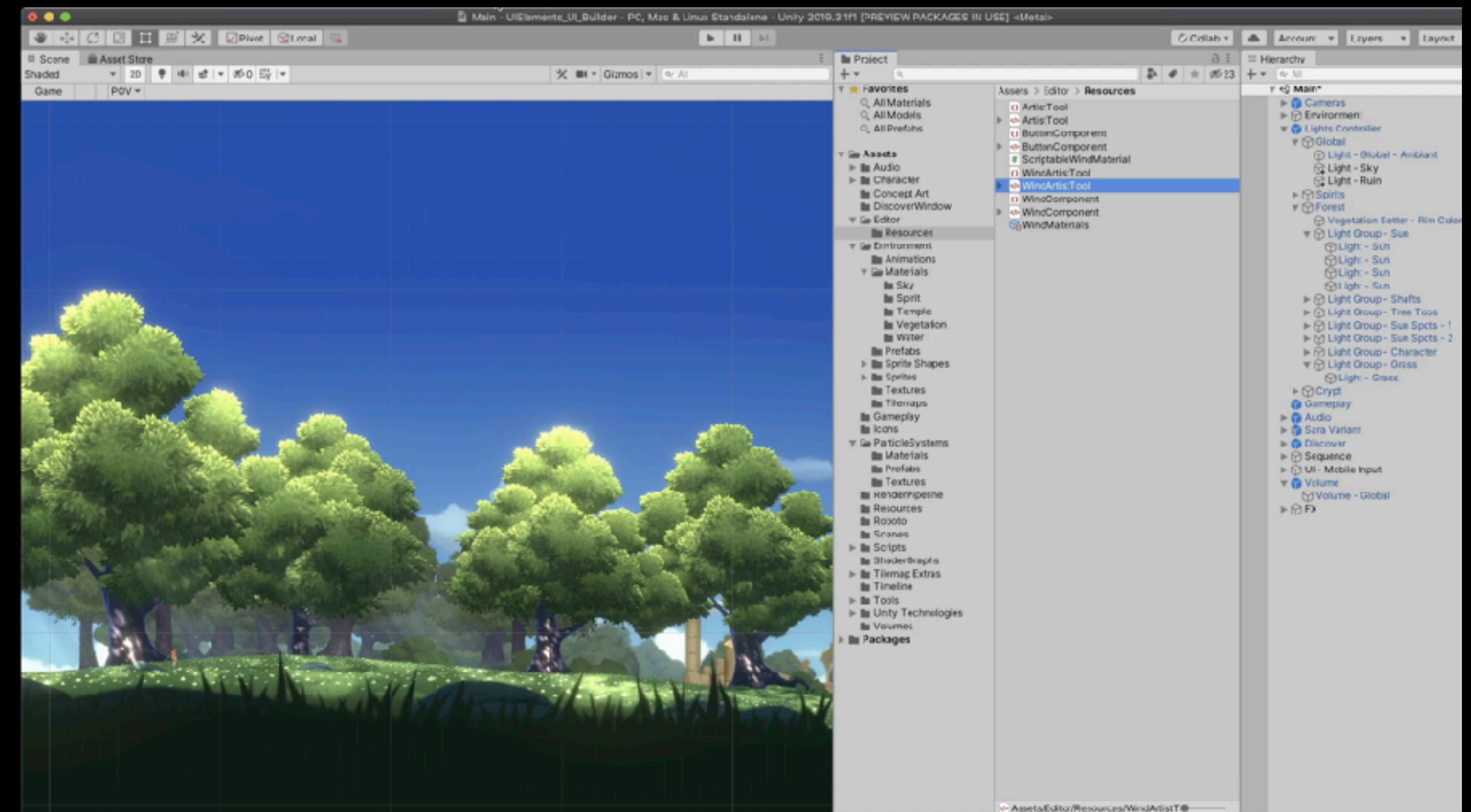
Prerelease

In Development

A new retained mode API which allows for complex and performant user interfaces, by letting the system optimize what to draw and when to draw it.

It also lets you decouple your Hierarchy and styling from functionality, which results in a better separation of concerns and more approachable UI authoring for both designers and programmers.

Using UXML asset to define your Hierarchy and style sheets for style and layout rules promotes collaboration and reusability within or across projects.





# e. Creative workflows. Scalable Quality. Re

## UI Development

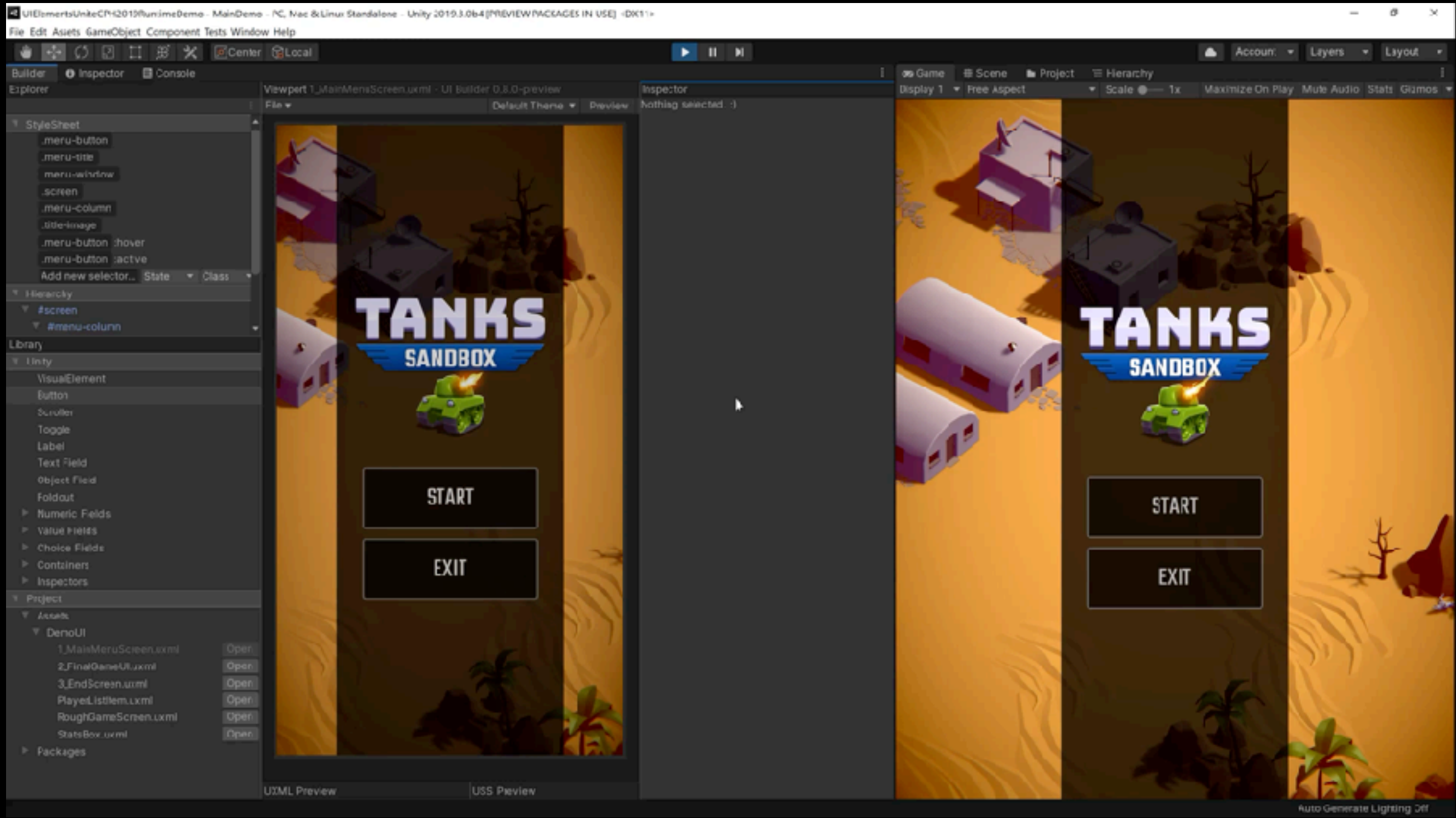
Released

Prerelease

In Development

The UI Builder provides a familiar UI authoring experience. It offers easy access to the toolkit's rich feature set and allows quick validation and iteration, all for an efficient onboarding process.

It's now also possible to leverage existing features to build screen space UI for all of Unity's supported target platforms.





# Creative workflows.

Scalable Quality. Re

## UI Development

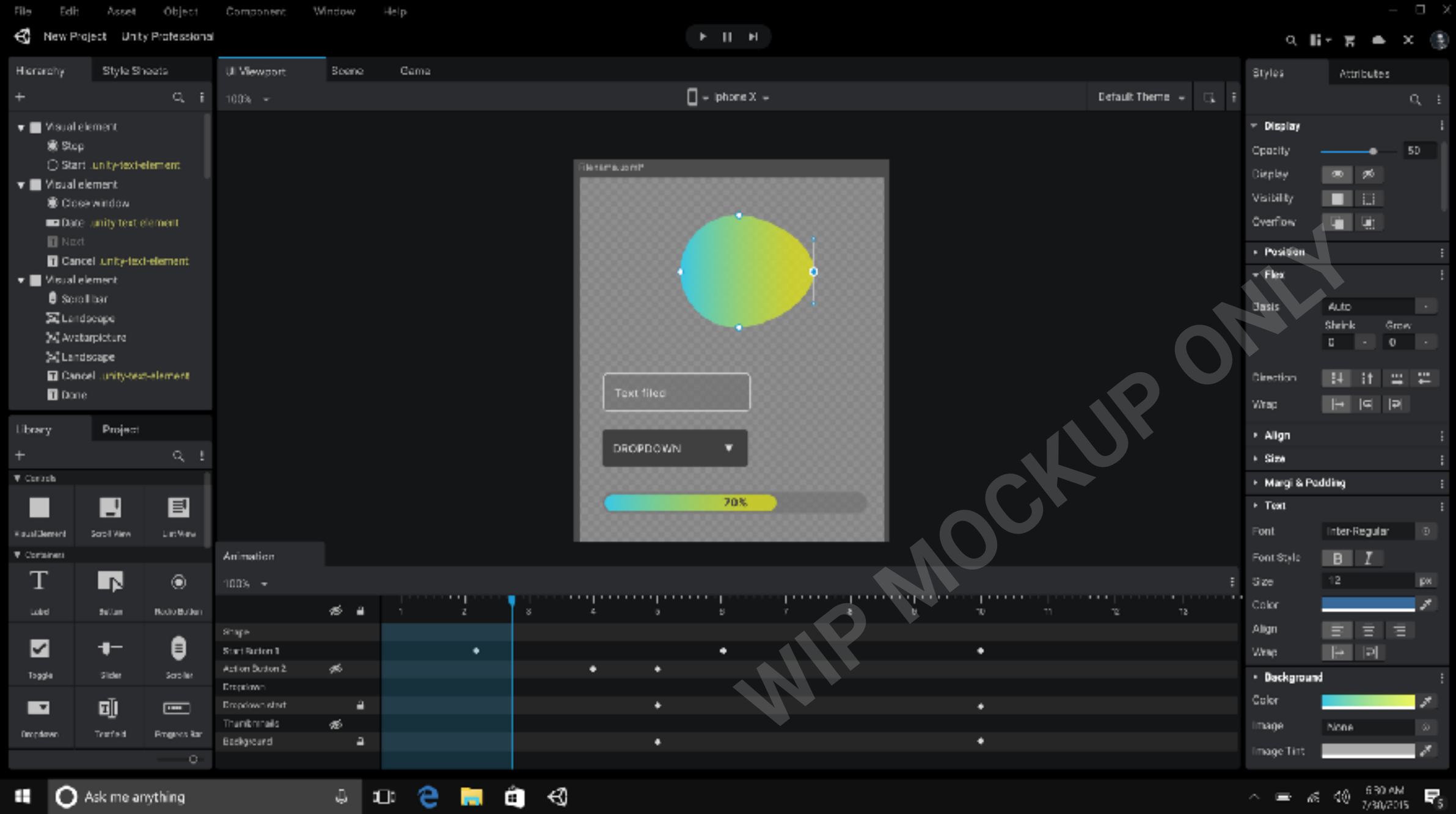
Released

Prerelease

In Development

Add support for more advanced CSS features in order to build rich and dynamic user interfaces, such as Transitions, Animations, Gradients, Filters and more.

Combined with the support of vector graphics, it will be possible to make UI that looks great across different screen resolutions or in world space, without having to rely on textures.





# Creative workflows.

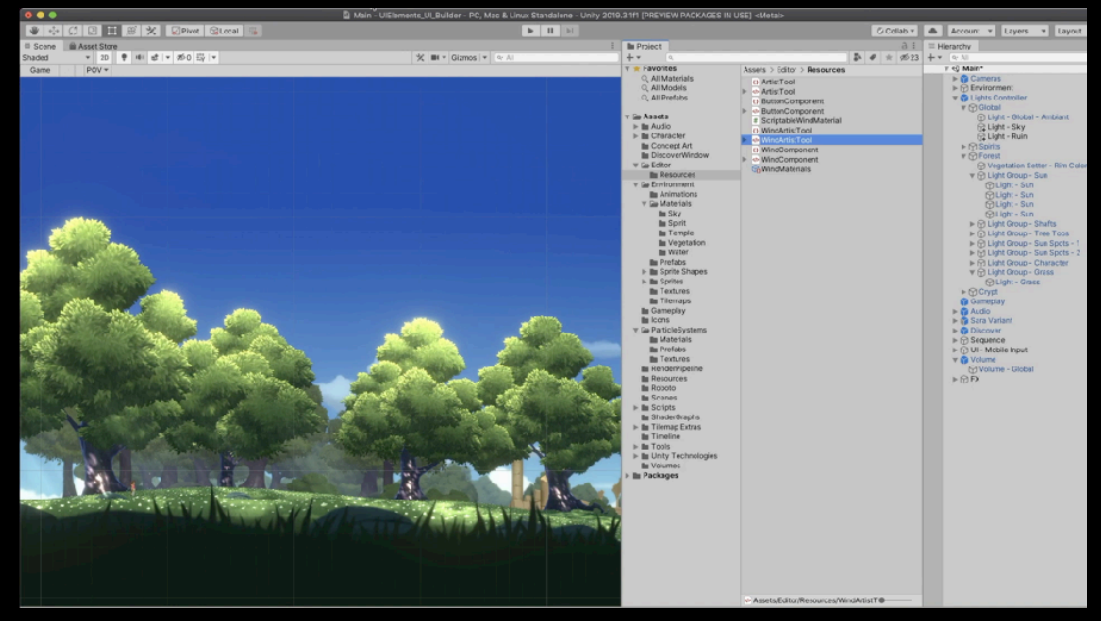
Scalable Quality. Re

## UI Development - highlights

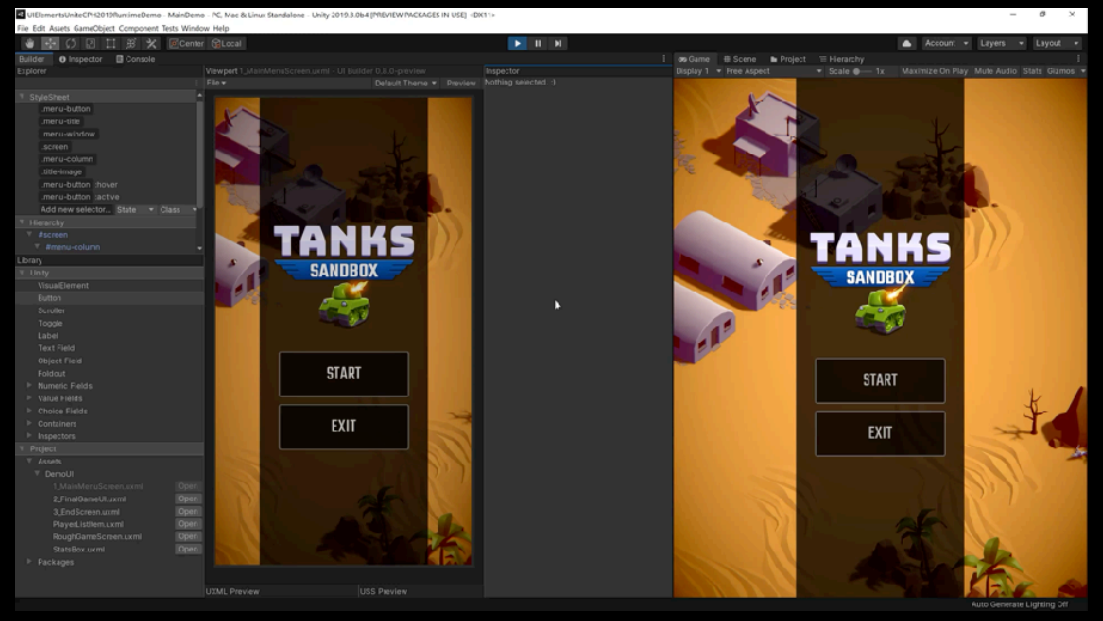
Released

Prerelease

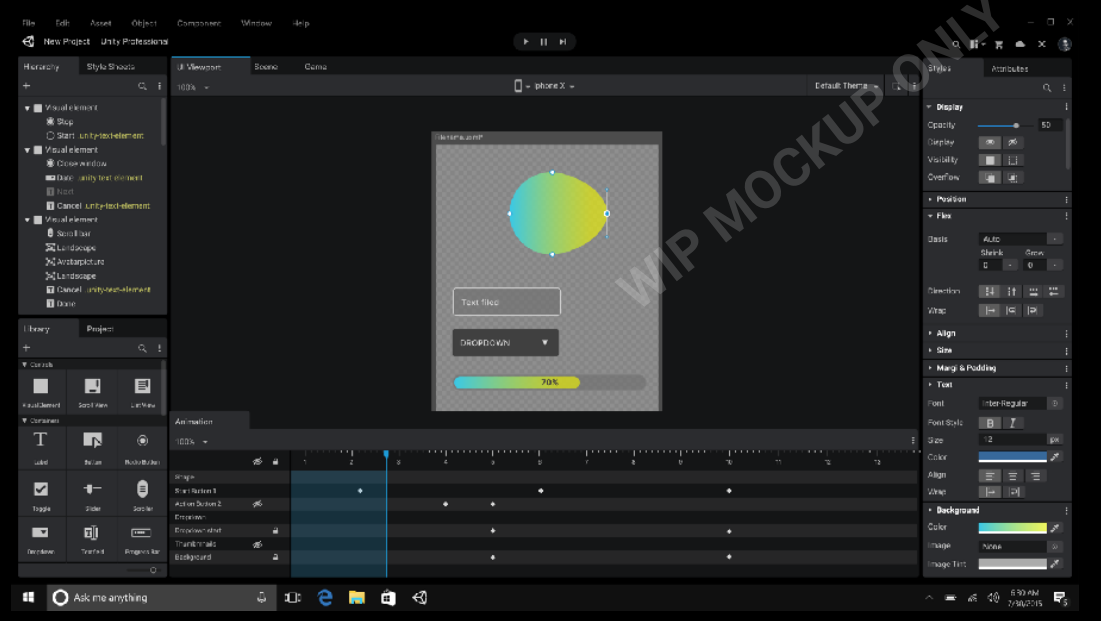
In Development



- Toolkit for Editor extensions
  - VisualElement API
  - Layout engine
  - UI Renderer
  - UI assets (UXML & USS)
  - Event System
  - UI Debugger



- Runtime support
  - UI Builder tooling
  - Rich text



- UI Animation
- Vector Graphics support
- Responsive UI
- World space UI
- Custom Shaders
- Timeline and Visual Scripting integration



e. **Creative workflows.** Scalable Quality. Re

## Smart Design & Creation

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### The Mission

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**Unlock the power of AI, Machine Learning, and Simulation to enable more efficient creation and testing at scale.**

# e. Creative workflows. Scalable Quality. Re

## Smart Design & Creation

Released

Prerelease

In Development



Deliver an innovative, AI-assisted artistry tool to scale your creativity.



Empowering designers to do more and opening up machine learning experimentation.



Building smarter and more deeply integrated AI and machine learning tools.



# e. Creative workflows. Scalable Quality. Realistic

## Smart Design & Creation

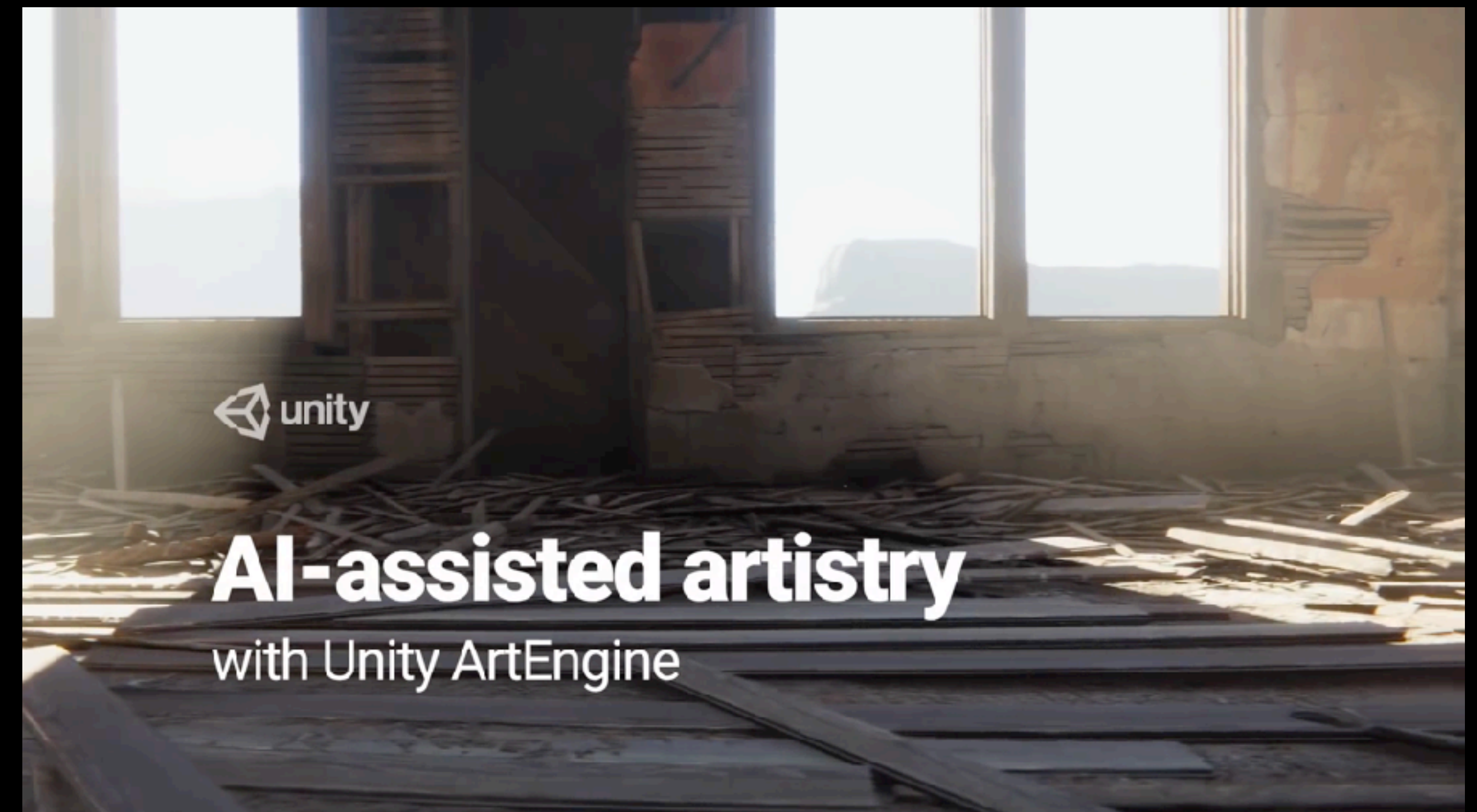
### Released

### Prerelease

### In Development

For large and enterprise studios, we released ArtEngine, a content creation tool that uses Creative AI to create ultra-realistic PBR materials based on real world data.

ArtEngine helps close the gap between the massively increasing demand for content and the current limited ability to produce visuals.





# e. Creative workflows. Scalable Quality. Re

## Smart Design & Creation

Released

Prerelease

In Development

Currently in beta, Unity Game Simulation is a new service that optimizes your game balance more efficiently and accurately by simulating millions of game playthroughs in the cloud.

We also are working on AI Planner which automatically generates intelligent character behavior capable of governing resource allocation, inventory management, path planning, and so much more.

Finally, the open-source ML-Agents enable training and deployment of intelligent agents using deep learning. These trained agents can be used to control NPC behavior, automate testing, and evaluate design decisions.





# e. Creative workflows. Scalable Quality. Re

## Smart Design & Creation

Released

Prerelease

In Development

Unity ML Agents 1.0 will continue to be open source with focus on stable APIs and thorough testing to work with LTS versions of Unity. As part of that, we're working to provide the ML-Agents C# toolkit as a package in the Unity Package Manager.

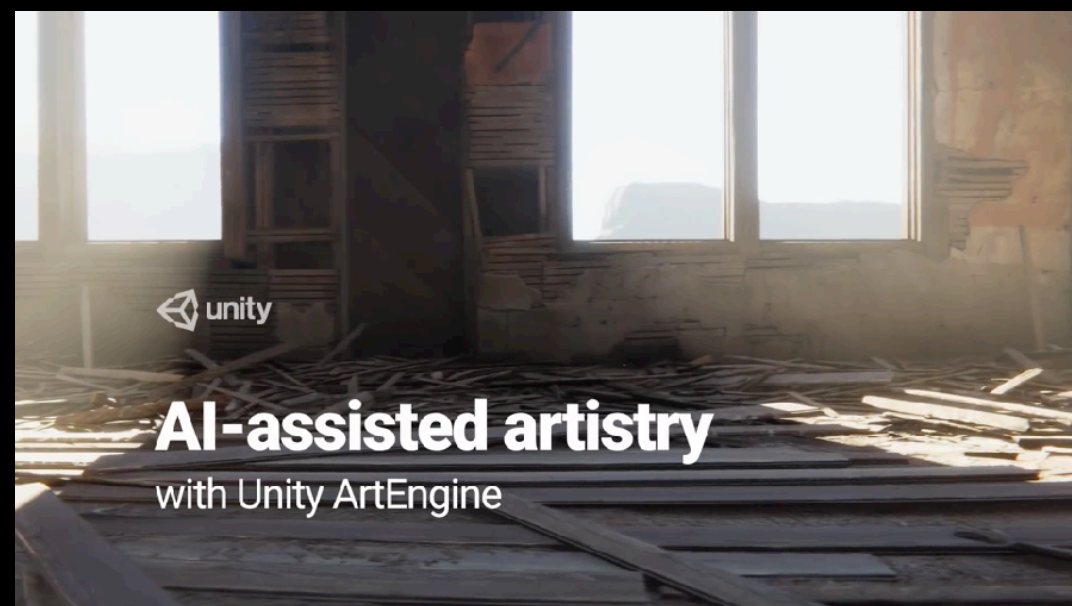
Meanwhile, we're also focused on bringing the ArtEngine's AI-assisted artistry tools to individual users through product enhancements and deeper integration into the Unity engine.



# e. Creative workflows. Scalable Quality. Re

## Smart design & creation - highlights

### Released



- ArtEngine (Enterprise)

### Prerelease



- Unity ML-Agents
- Unity Game Simulation
  - Game Simulation Dashboard
  - Unity Editor Interface
  - SDK
- AI Planner

### In Development



- Unity ML-Agents 1.0
- ArtEngine (Individual Users)
  - Unity Integration
  - Individual User Enhancements



e. **Creative workflows.** Scalable Quality. Re

## Audio & Video

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### The Mission

---

**Create an audio and video toolset that  
empowers you with a professional and  
extensible  
media solution.**



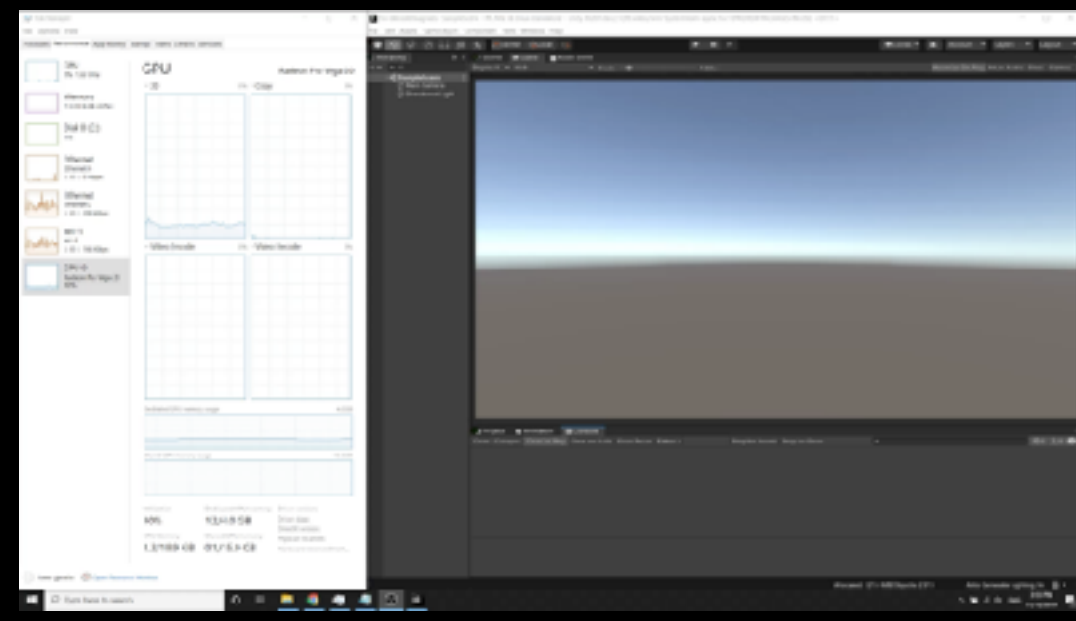
# Creative workflows. Scalable Quality. Re

## Audio & Video

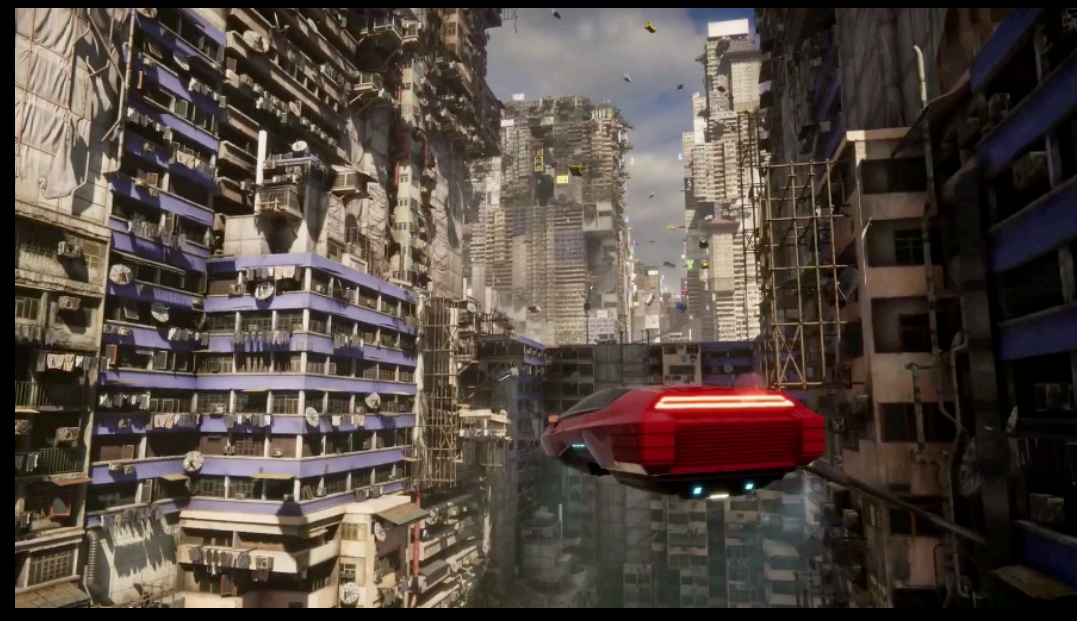
Released

Prerelease

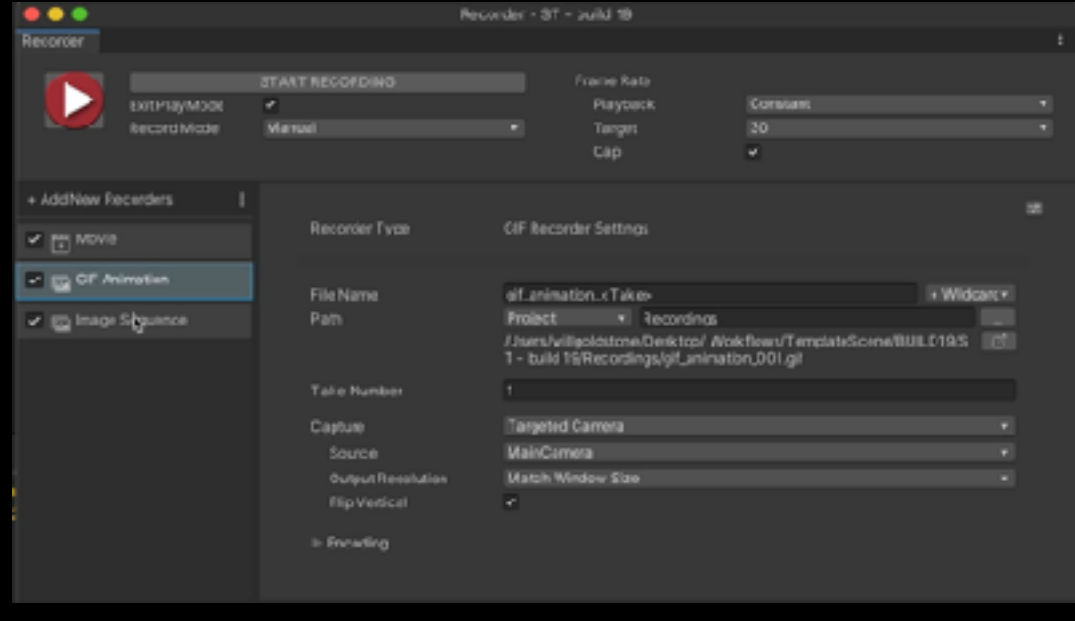
In Development



Audio/video tooling and Recorder export



Foundations for high performance and extensibility



Building up from a solid foundation: more and better front-end features





# e. Creative workflows. Scalable Quality. Re

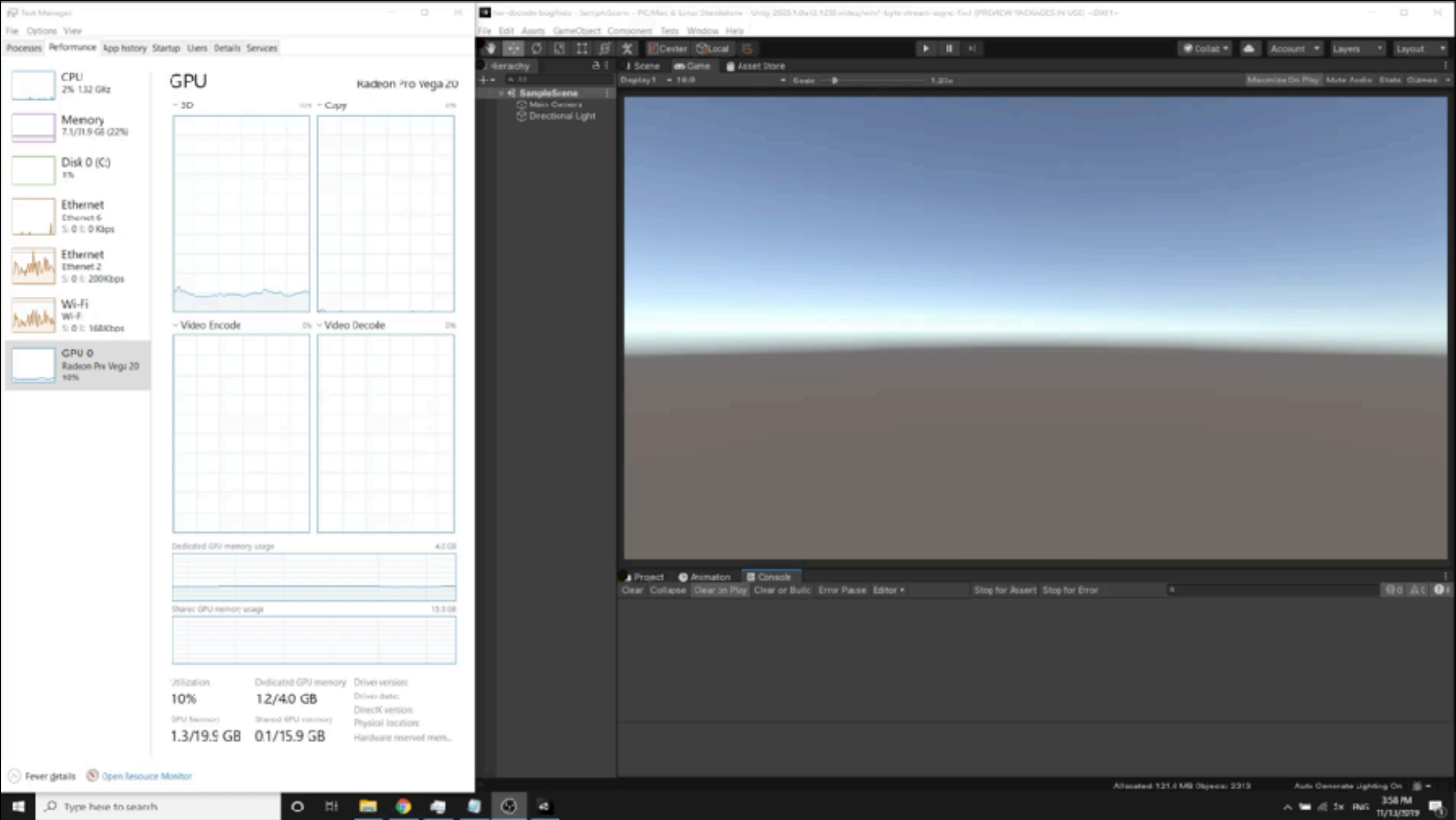
## Audio & Video

Released

Prerelease

In Development

We shipped audio and video tooling to allow for audio playback and mixing, as well as video playback and offline recorder in the Editor.





# e. Creative workflows. Scalable Quality. Re

## Audio & Video

Released

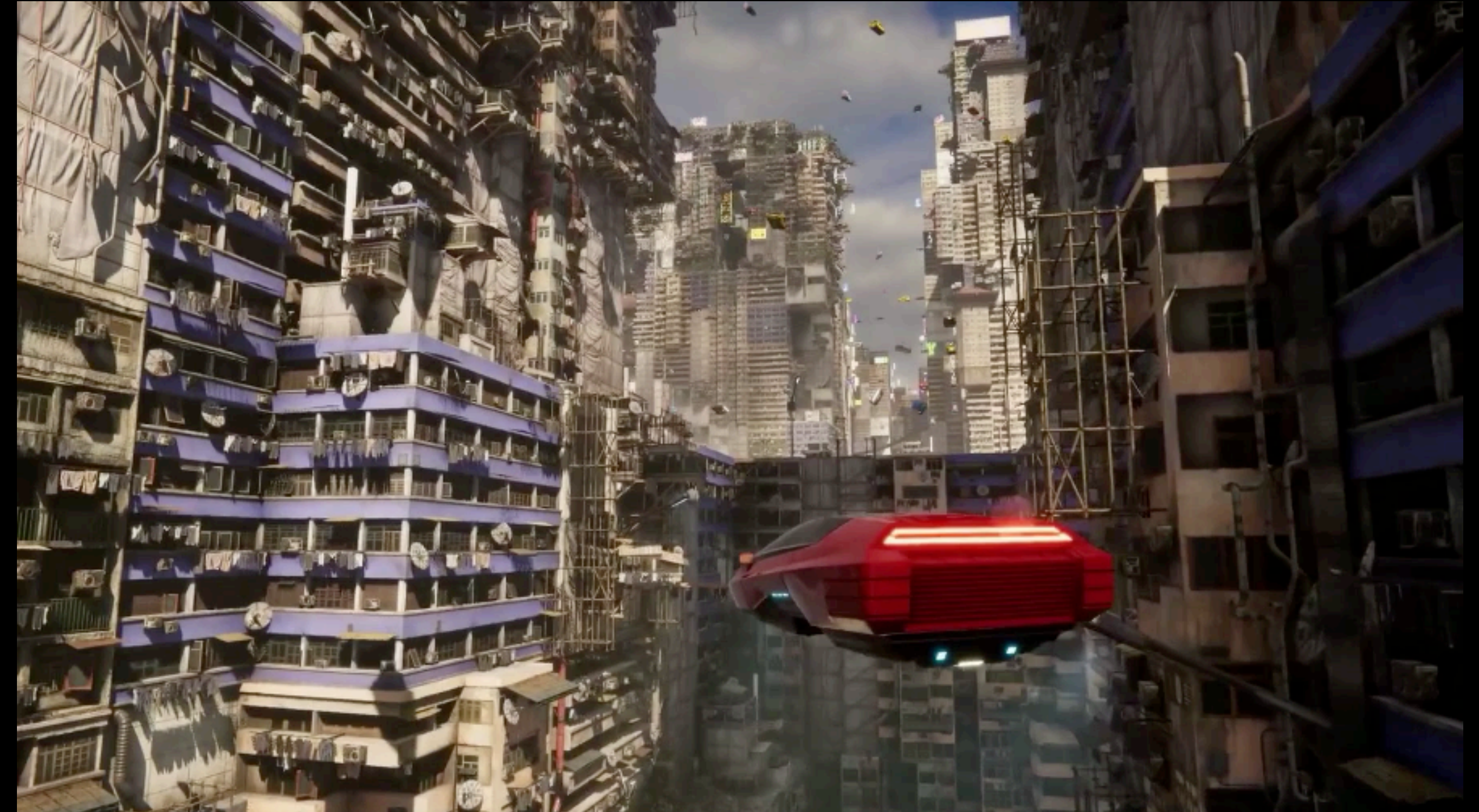
Prerelease

In Development

We're building out the foundations of a highly performant and extensible A/V stack, including new highly-optimized, DOTS-enabled features.

Meanwhile, we are hardening DSPGraph, the new low-level rendering engine for DOTS.

Recorder gets public APIs to allow programmatic control and support of external video codecs.







# Creative workflows.

Scalable Quality.

## Audio & Video

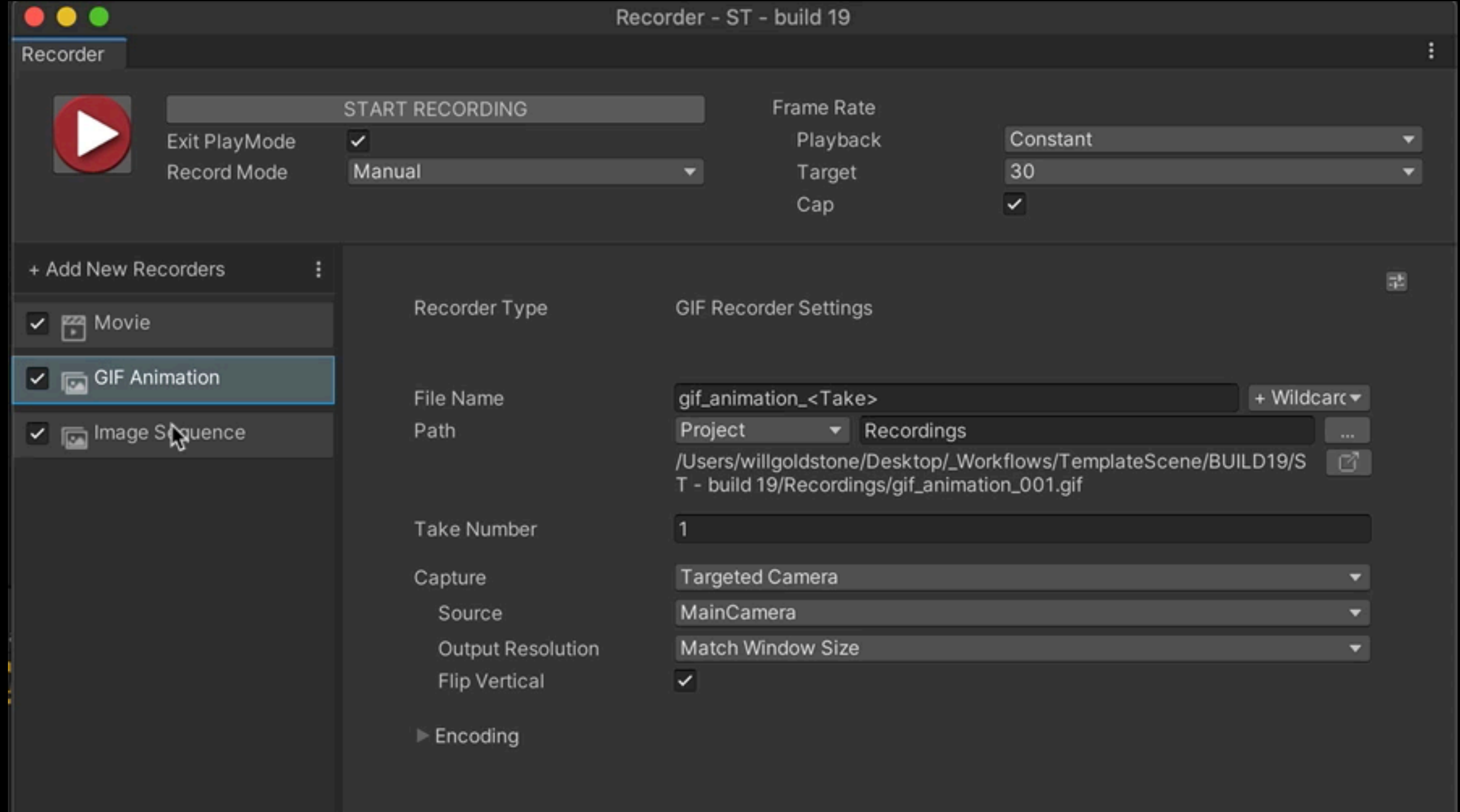
Released

Prerelease

In Development

We build on top of the foundation: a unified media layer underpinning higher-level, developer-facing APIs and front-end tooling. HDRP adds a compositing framework to enable chroma keying, insertion of video plates in a 3D world and per layer compositing.

Recorder can export broadcast-quality videos off-the-shelf.



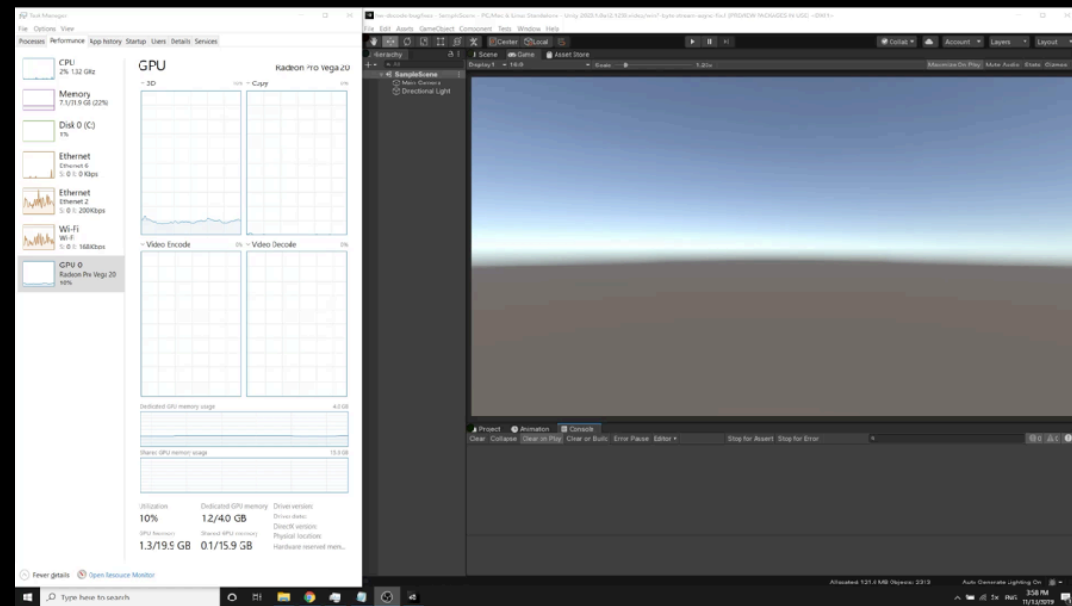
# e. Creative workflows. Scalable Quality. Re

## Audio & Video - highlights

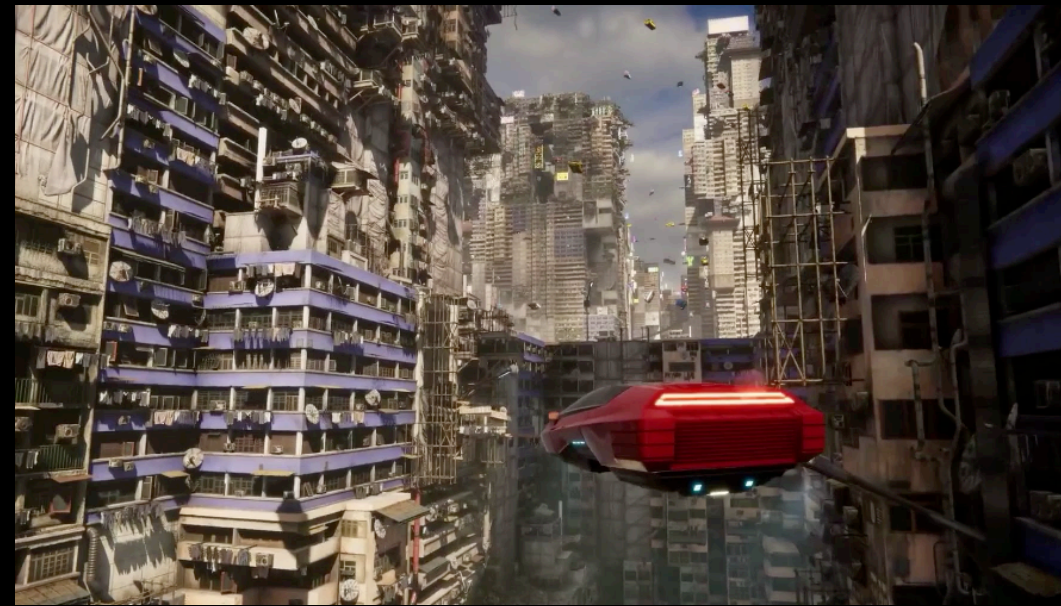
Released

Prerelease

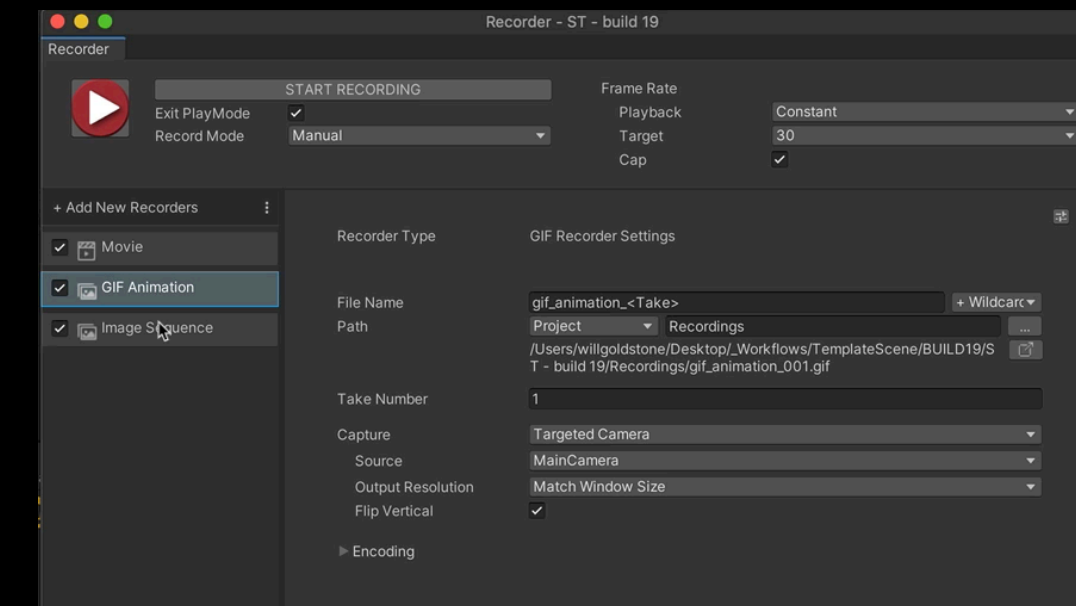
In Development



- Windows Hardware acceleration:
  - DirectX Video Acceleration (2.0) - supports both DX11 and DX12.
  - Video encoded as H.264 or H.265 can load into textures instead of memory, saving bandwidth, improving performance and opening the possibility of higher resolutions such as 8K.



- DSPGraph – Low level rendering/mixing audio engine
  - Low-level, node-based audio rendering system
  - Enables building high-performance, custom audio engine in Unity using C#
  - Compatible with DOTS & mono Unity scripting
- Recorder
  - Encoding API to plug custom codecs
  - Recorder API to pilot recorder from script



- DOTS.Audio/DOTS.Media
  - Support for custom DSP effects
  - Interchangeable audio renderer
  - Pluggable building blocks (codecs, file formats, devices, etc).
- High end offline video recording (Editor only)
  - ProRes & Cinematic Motion Blur Support
  - Converged full-frame path tracer Recording



e. **Creative workflows.** Scalable Quality. Re

## Camera Design

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### The Mission

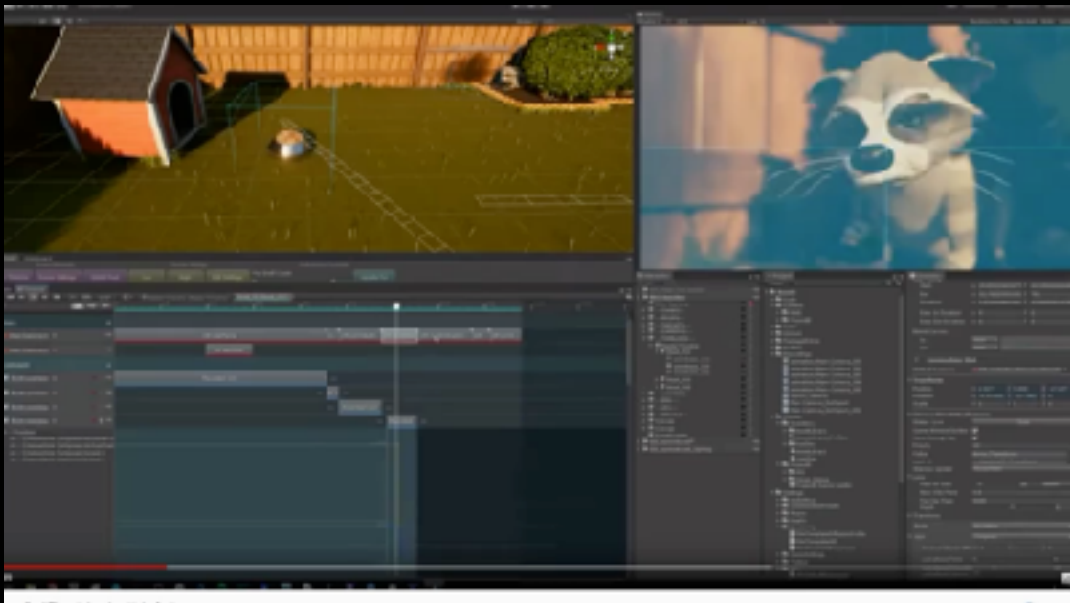
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**To create a versatile, powerful dynamic camera system for cinematics and gameplay.**

e. **Creative workflows.** Scalable Quality. Re

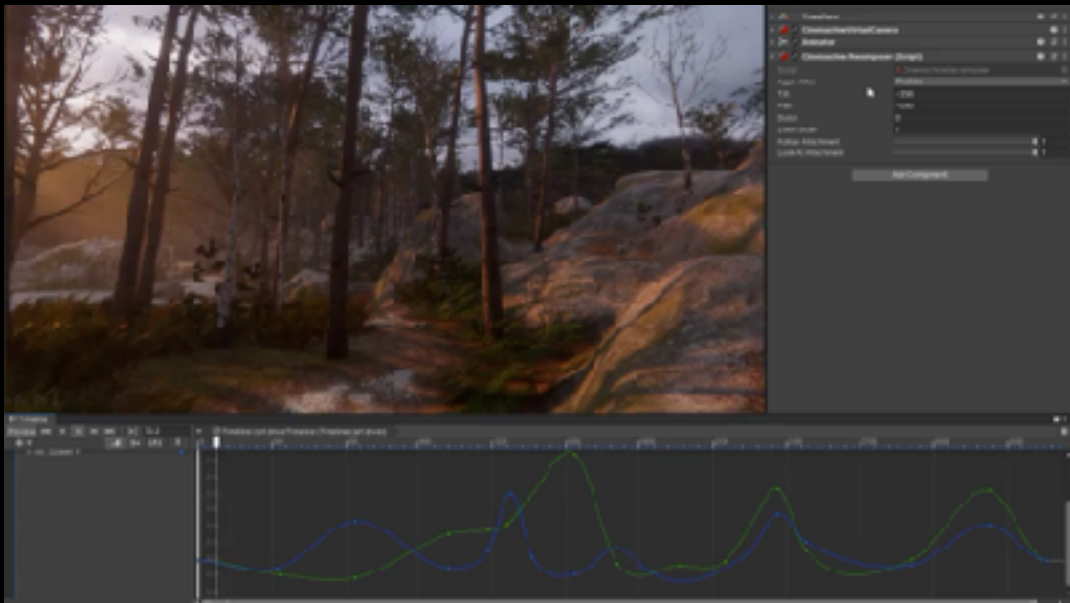
Camera Design

Released



An artist-friendly toolset for authoring cinematic and game cameras

Prerelease



Cinemachine as a verified package.

In Development



Next-gen version of Cinemachine, leveraging the power of DOTS!



# e. Creative workflows. Scalable Quality. Re

## Camera Design

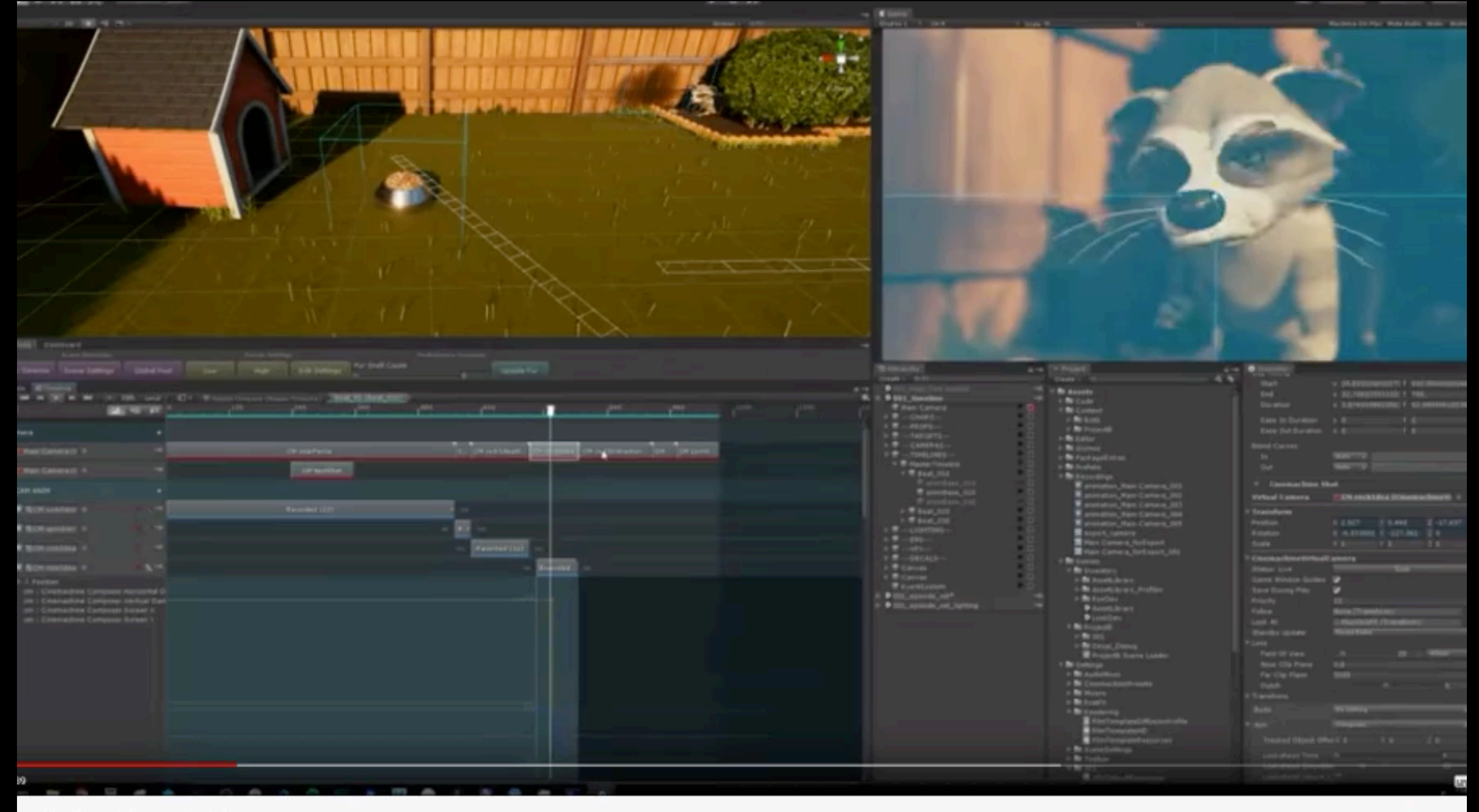
Released

Prerelease

In Development

Artist-friendly toolset that allows for the crafting of camera movement and behaviors with a diverse array of rigs that are tuneable in real-time.

Integration with 2D and 3D, Timeline and Post Processing, linear storytelling and interactive gameplay, as well as plug-in extensibility.





# e. Creative workflows. Scalable Quality. Re

## Camera Design

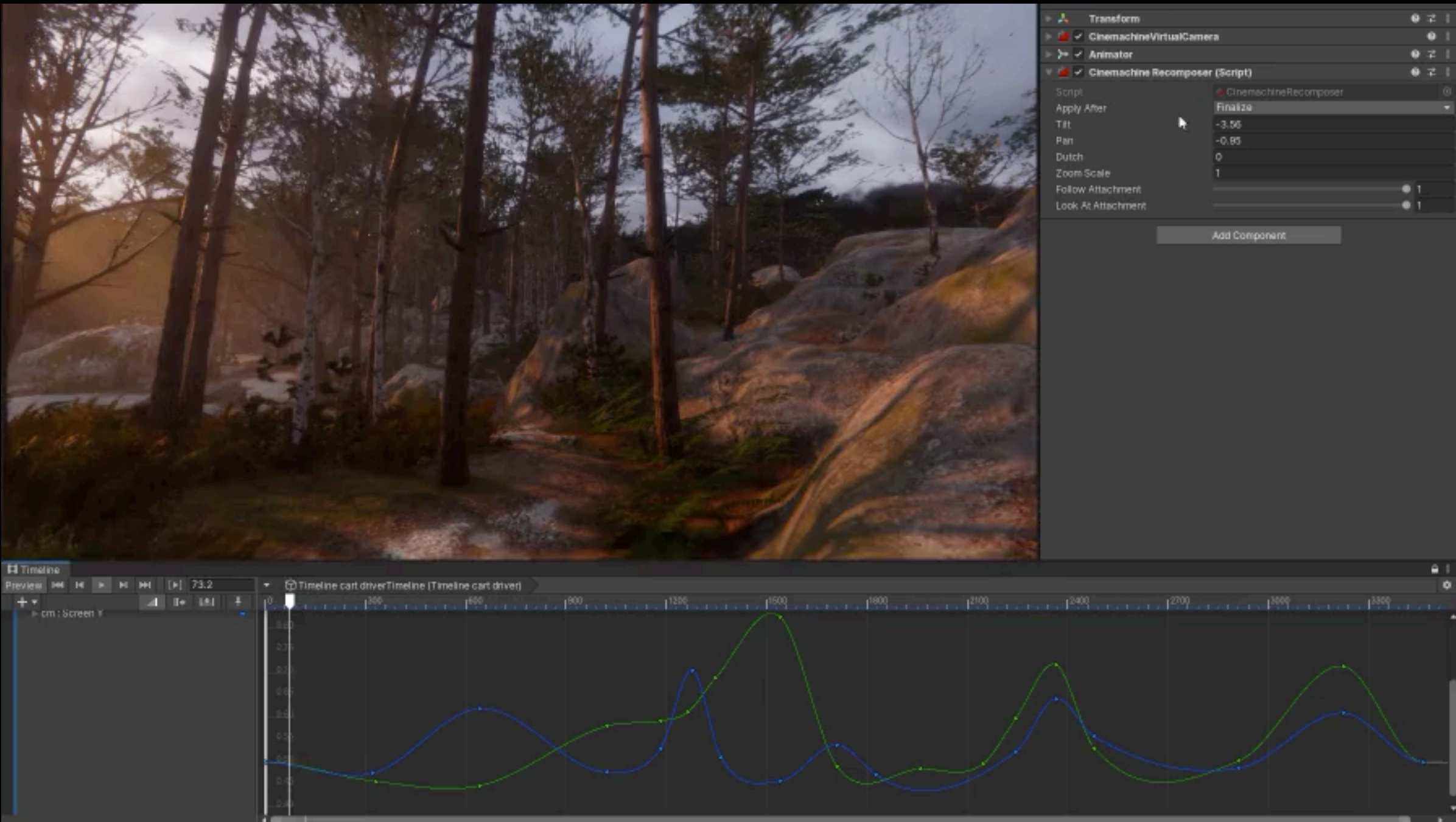
Released

Prerelease

In Development

Bringing Cinemachine into the fold of verified packages. This means that we've tested it extensively against the current version of the Editor so we have confidence that it functions well for the majority of use cases.

Cinemachine has long been used by productions large and small, so we have high confidence in its stability and utility.





# e. Creative workflows. Scalable Quality. Re

## Camera Design

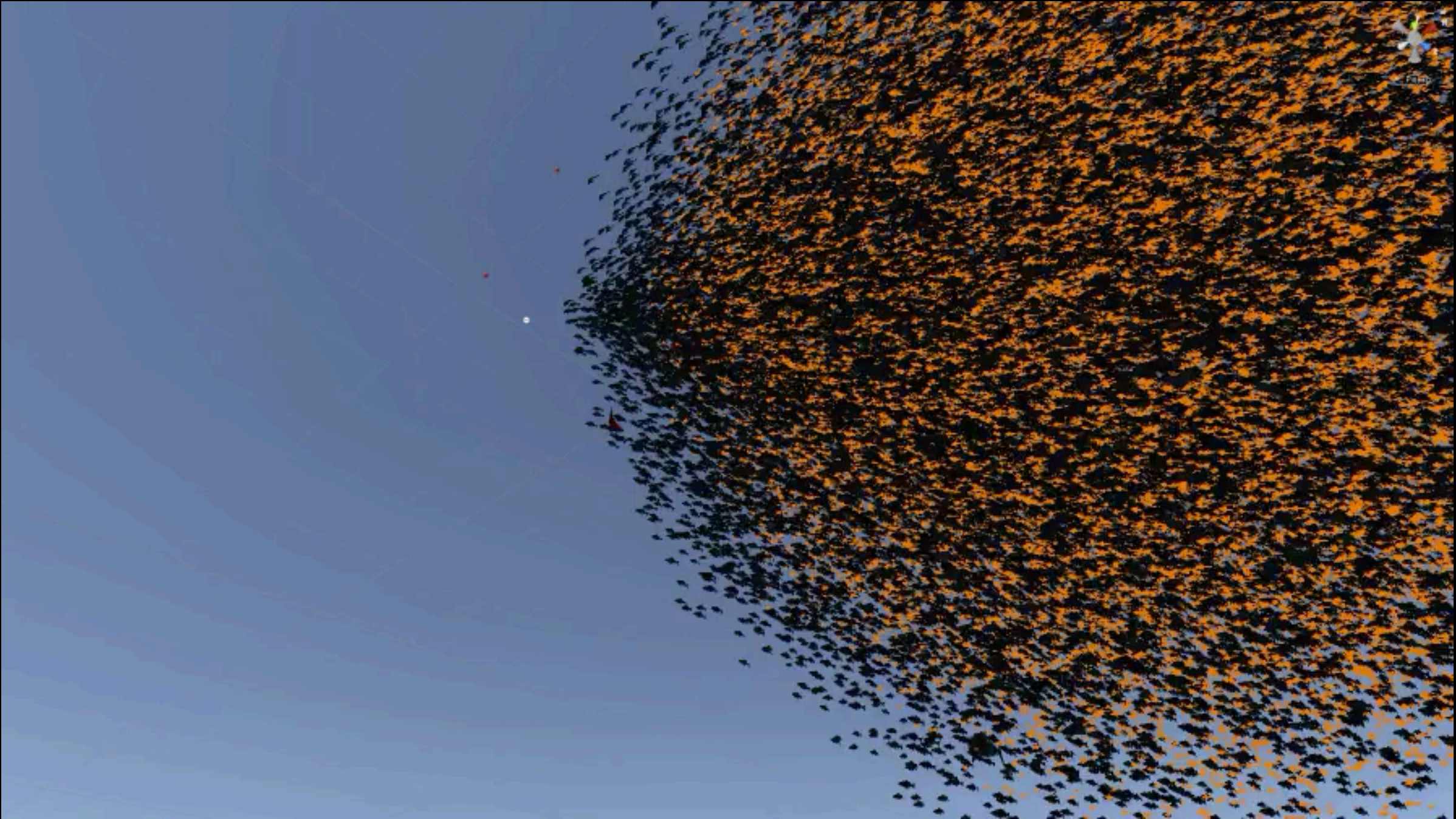
Released

Prerelease

In Development

Cinemachine for DOTS is a completely rewritten version of Cinemachine. We are still in early development, but moving towards feature parity.

Includes new systems for enhanced, dynamic camera selection.

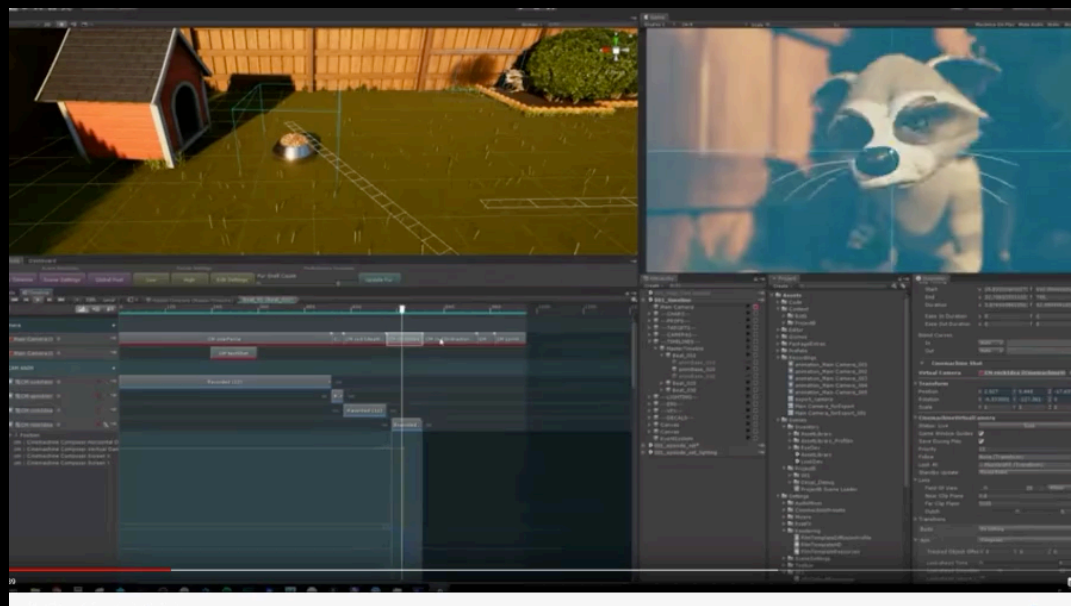




# Creative workflows. Scalable Quality. Re

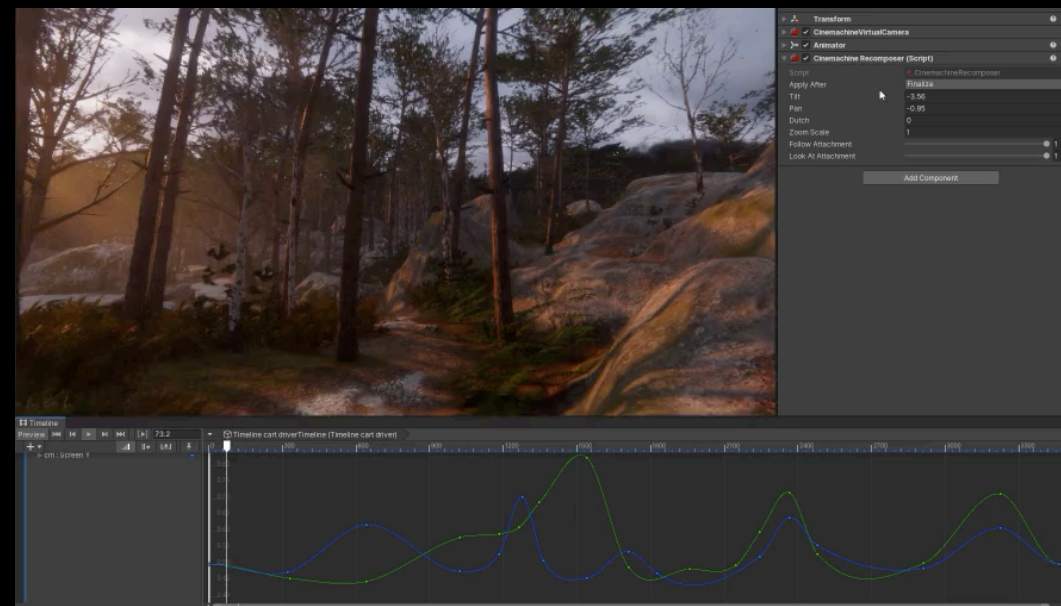
## Camera Design - highlights

### Released



- V2.4
  - HDRP 7 support
  - Pixel-perfect support

### Prerelease



- V2.5 is a verified for 2020.1
- V2.6 (evolutionary improvement with fixes and added features)
  - Improved Timeline tooling
  - 2 new specialized rigs for 3rd-person
  - Frame recomposer – Interactively reframe motion-captured camera data

### In Development



- Cinemachine for DOTS
  - Feature-parity with prior versions
  - Story Manager – Dynamically identifies the most interesting event
  - Virtual Director – Dynamically selects the best camera to present the event
  - DOTS allows for tens of thousands of active, evaluated cameras with near-zero performance hit
  - Project Tiny-compatible



# Scalable Quality. Reaching your audience

**Our third guiding principle is to ensure that you can build anything from the smallest 2D game to the biggest 3D world with no loss of quality.**



# Scalable Quality. Reaching your audience

## Working with assets

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### The Mission

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**Provide a non-intrusive, robust and scalable asset import pipeline.**





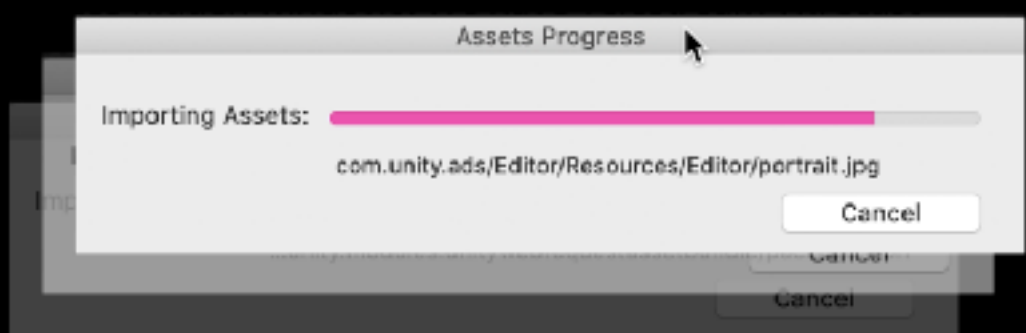
# Scalable Quality. Reaching your audience

## Working with assets

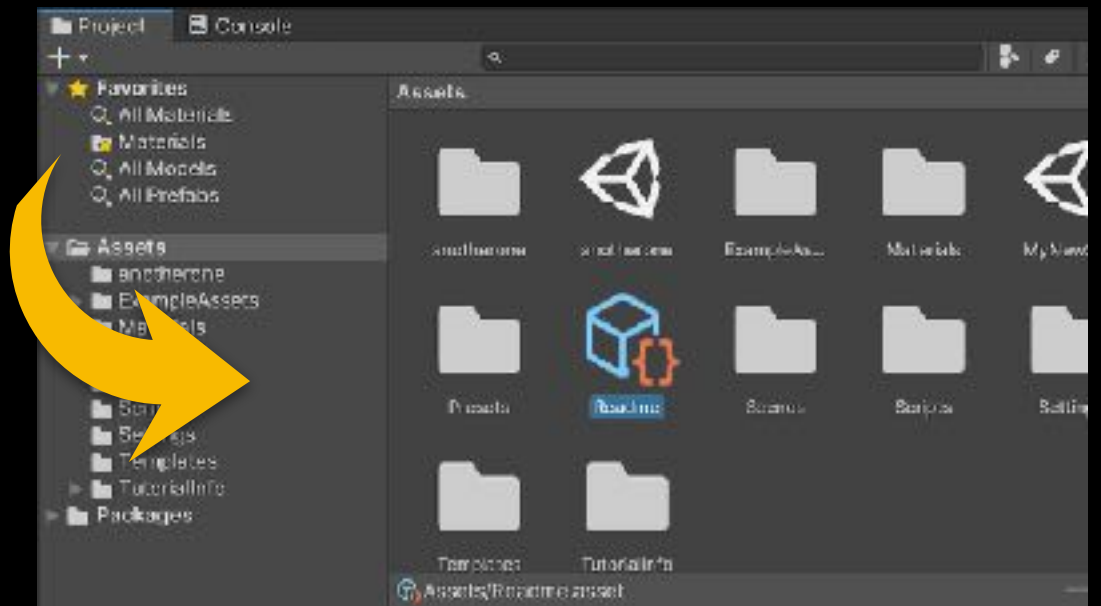
Released

Prerelease

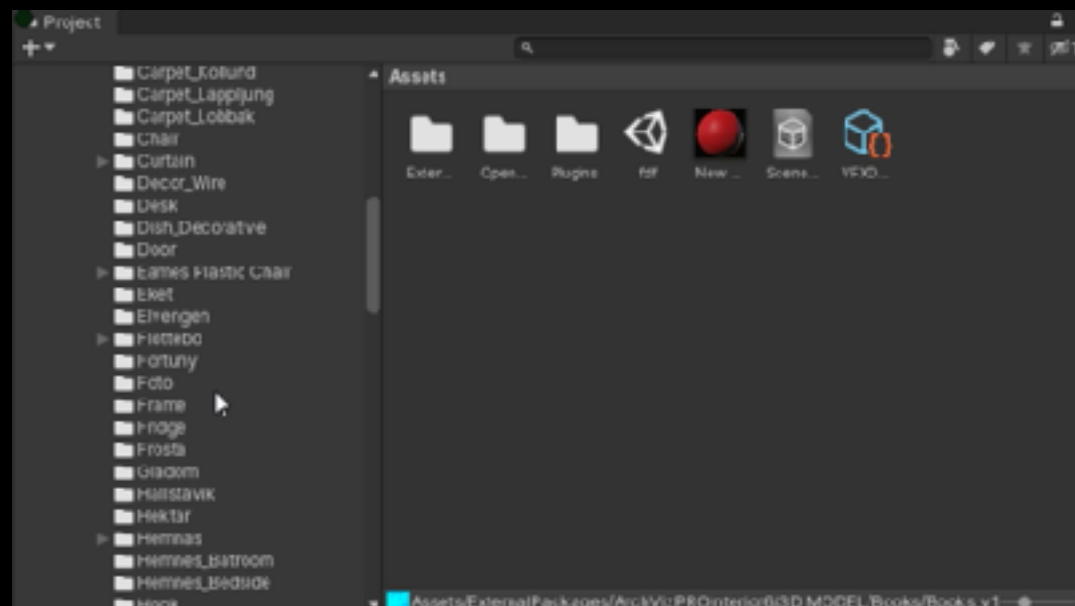
In Development



New asset import pipeline to enable scalable asset imports with robust dependency tracking



Faster asset refresh on Windows



Importing assets on-demand

# Scalable Quality.

Reaching your audience

## Working with assets

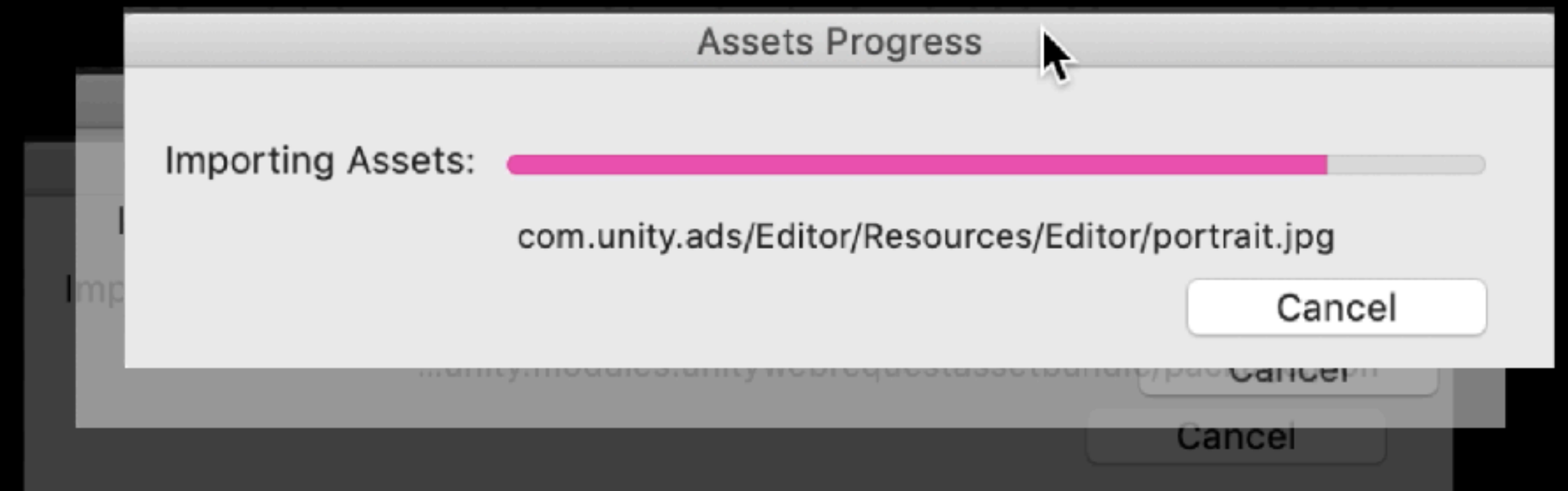
### Released

### Prerelease

### In Development

Developed a new asset import pipeline from the ground up to enable scalable asset imports with robust dependency tracking. Providing the foundation for on-demand and background importing

Performance improvements to the Addressable Asset System to enable larger content libraries





# Scalable Quality.

Reaching your audience

## Working with assets

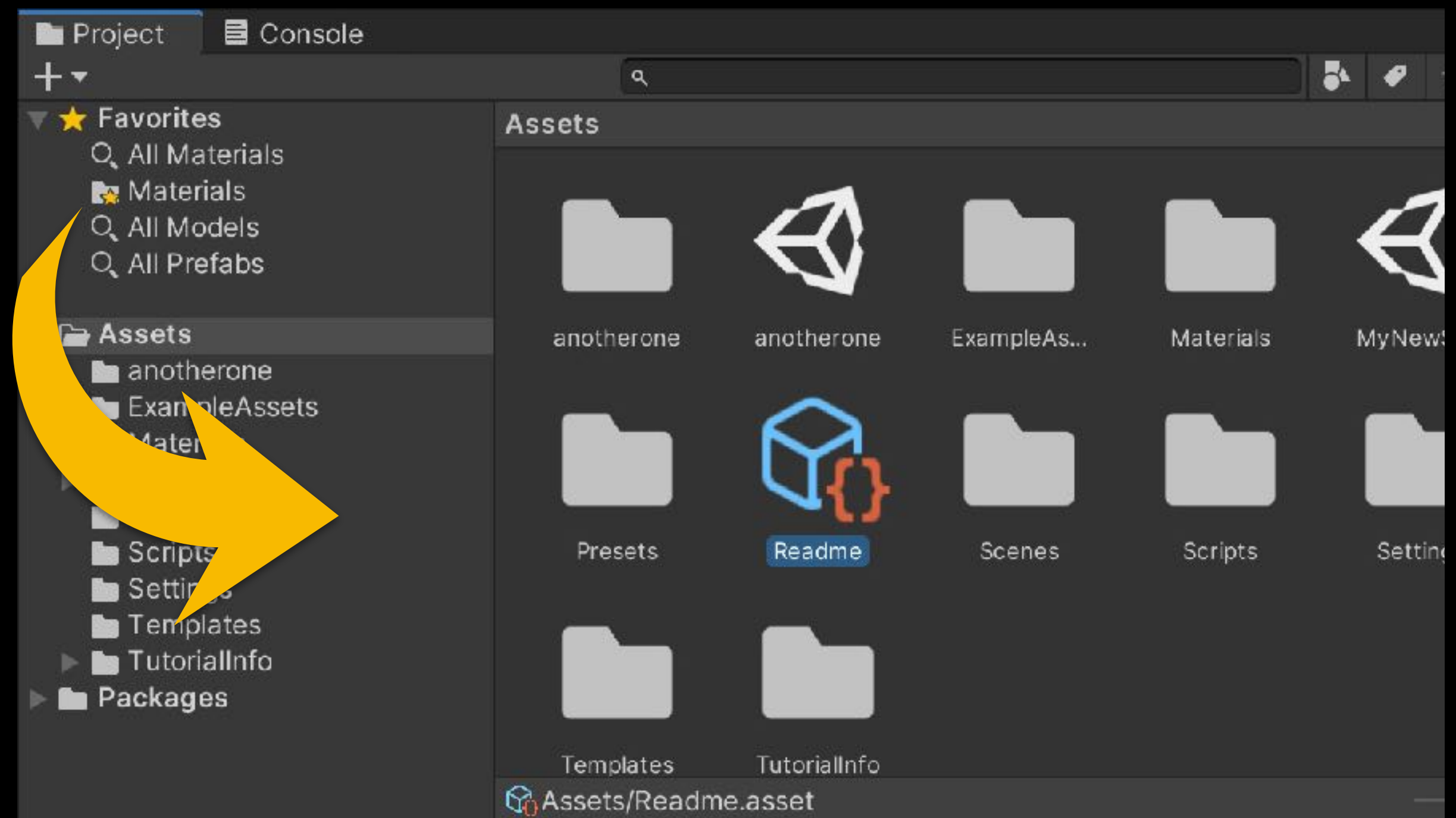
Released

Prerelease

In Development

Faster asset refresh on Windows by using operating system APIs to monitor file directories for changes instead of scanning them all.

This significantly reduces the pain of task switching between Unity and other applications.





# Scalable Quality.

Reaching your audience

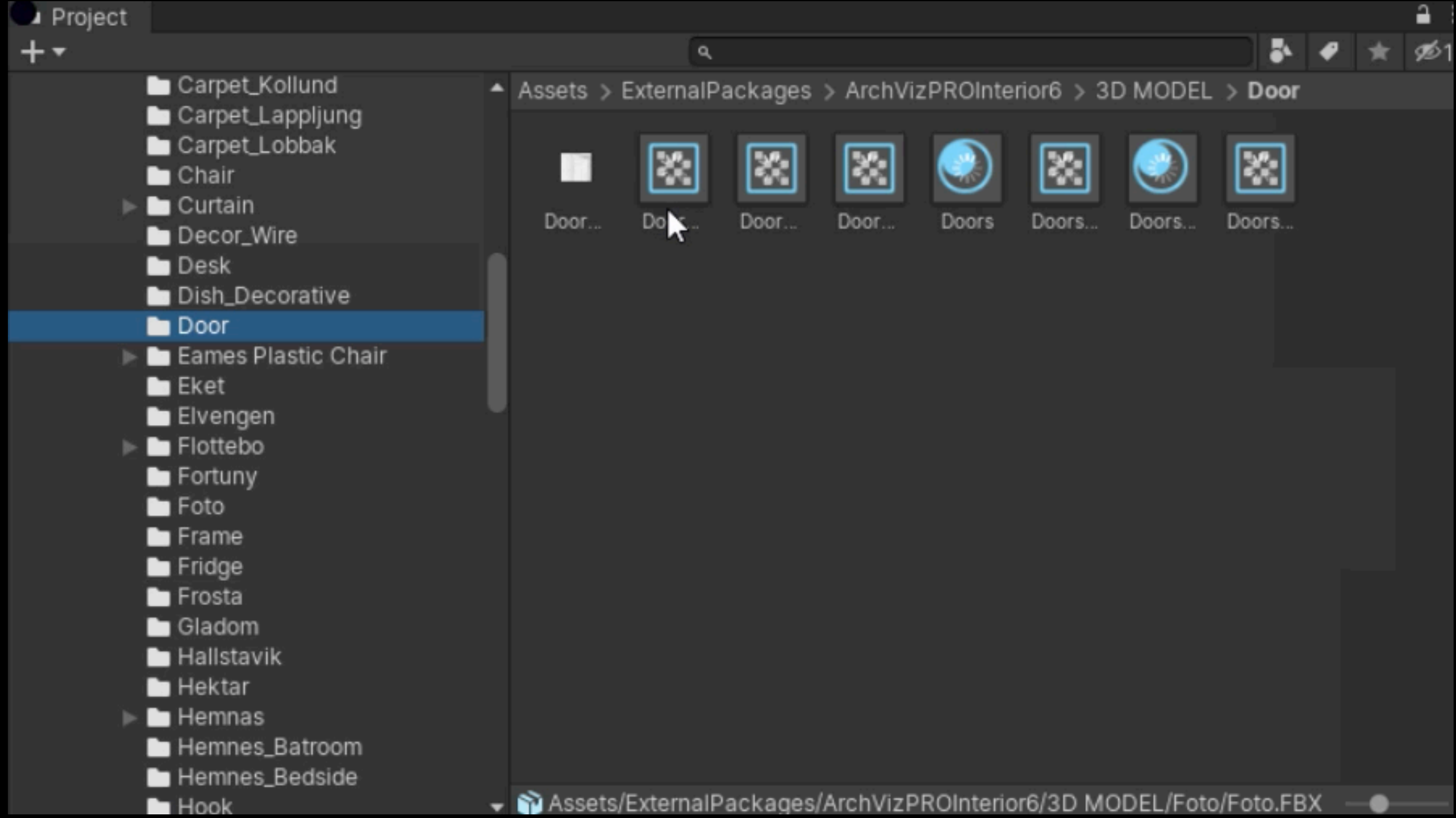
## Working with assets

Released

Prerelease

In Development

- Importing assets on-demand - only when required instead of everything up front
- Integrating the build pipeline with the import pipeline to share artifacts and improve performance for incremental rebuilds

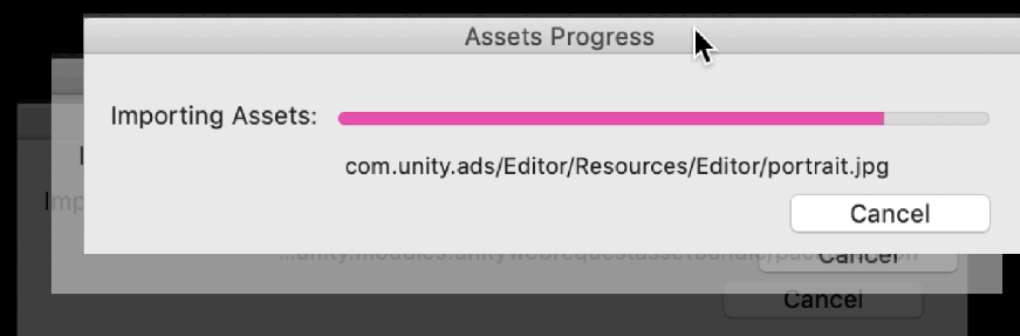




# Scalable Quality.

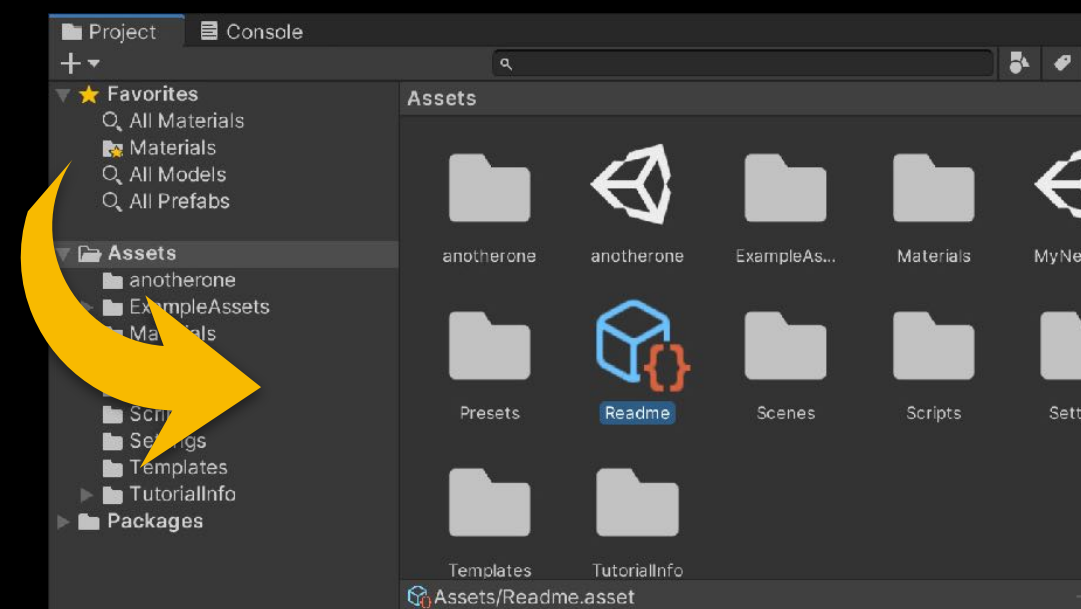
# Working with assets - highlights

# Released



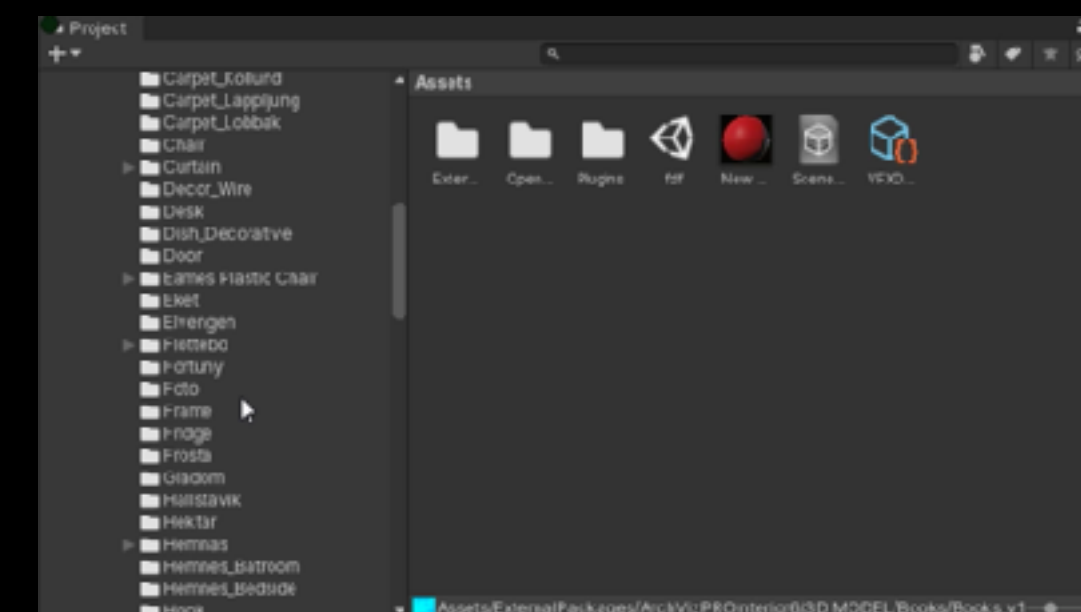
- Accelerator
- New Asset Import Pipeline
- Fast Platform Switching
- Dynamic Dependency tracking
- Foundation for OnDemand mode
- Addressable Asset System (v. 1.7.4)

# Prerelease



- Directory Monitoring (Windows / 2020.1)
- Texture MipMap Stripping

## In Development



- Cache consistency checking
- On-Demand Importing

# Scalable Quality. Reaching your audience

## Universal Rendering

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### The Mission

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**Bringing best-in-class visual quality,  
performance, and scalability to wider  
audiences.**





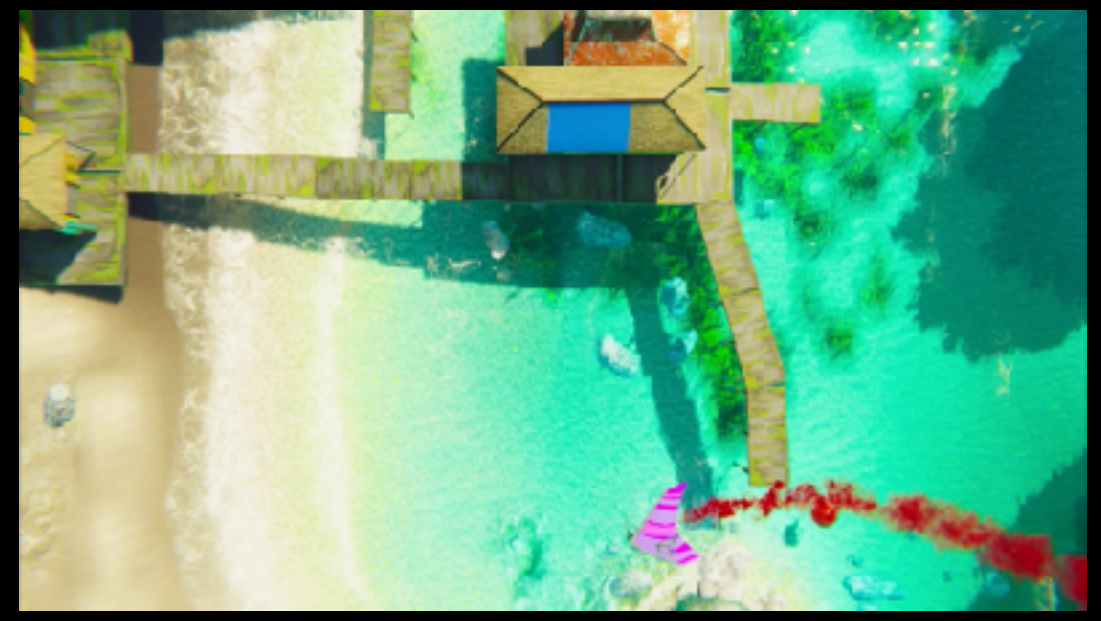
# Scalable Quality. Reaching your audience

## Universal Rendering

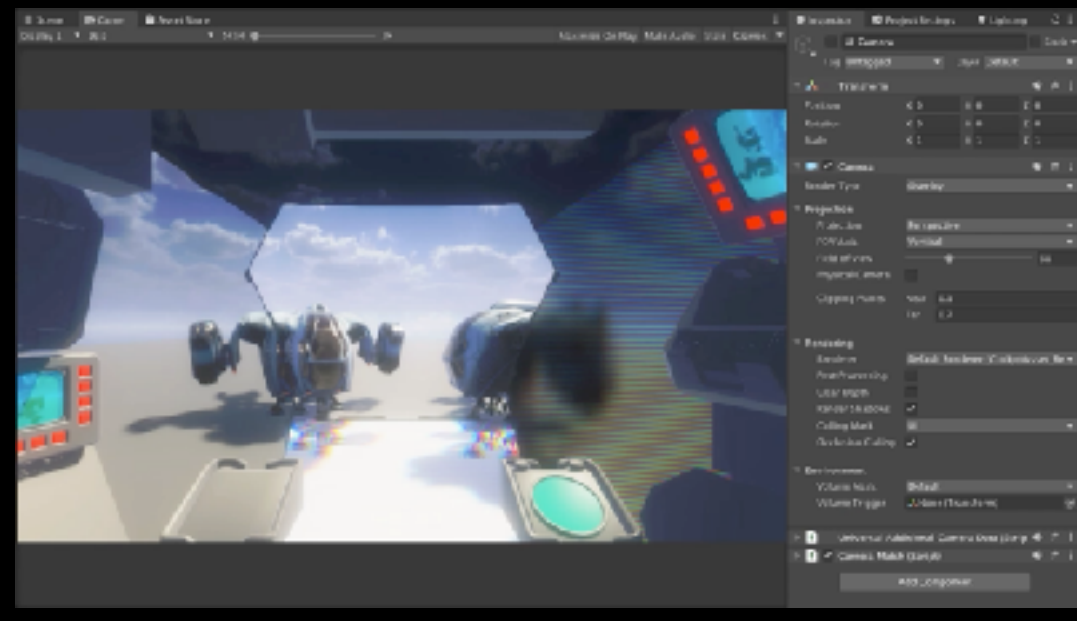
Released

Prerelease

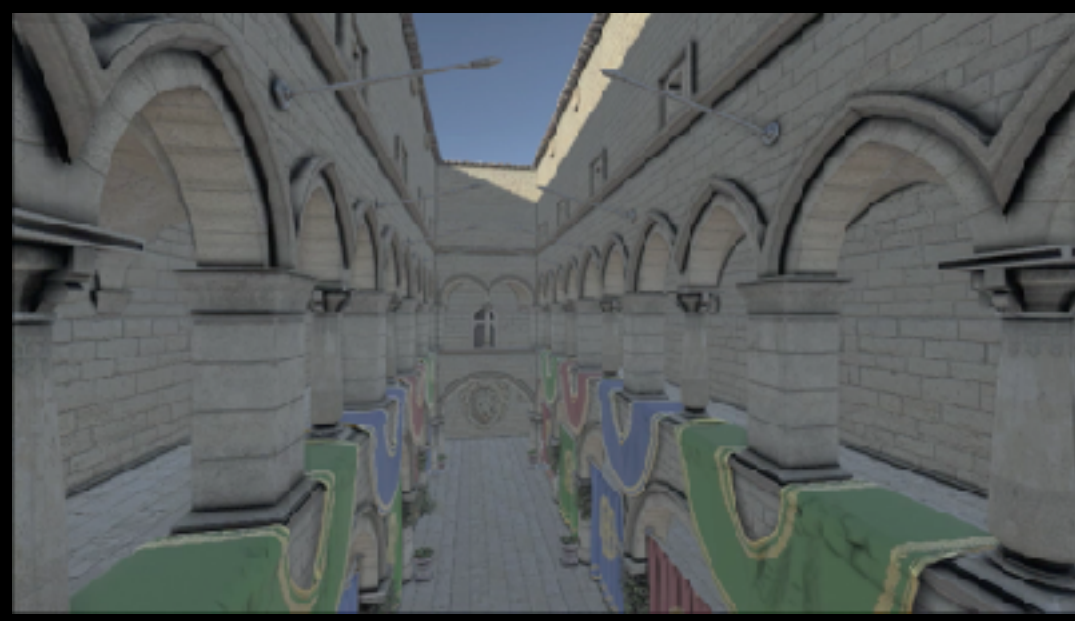
In Development



Lightweight is now Universal, and aims to be our default render option.



Focus in our next two releases is bug fixing and stability, plus we have added Camera stacking that many of you have asked for.



Development focus is now on getting Universal Render Pipeline to be our default option.



# Scalable Quality.

Reaching your audience

## Universal Rendering

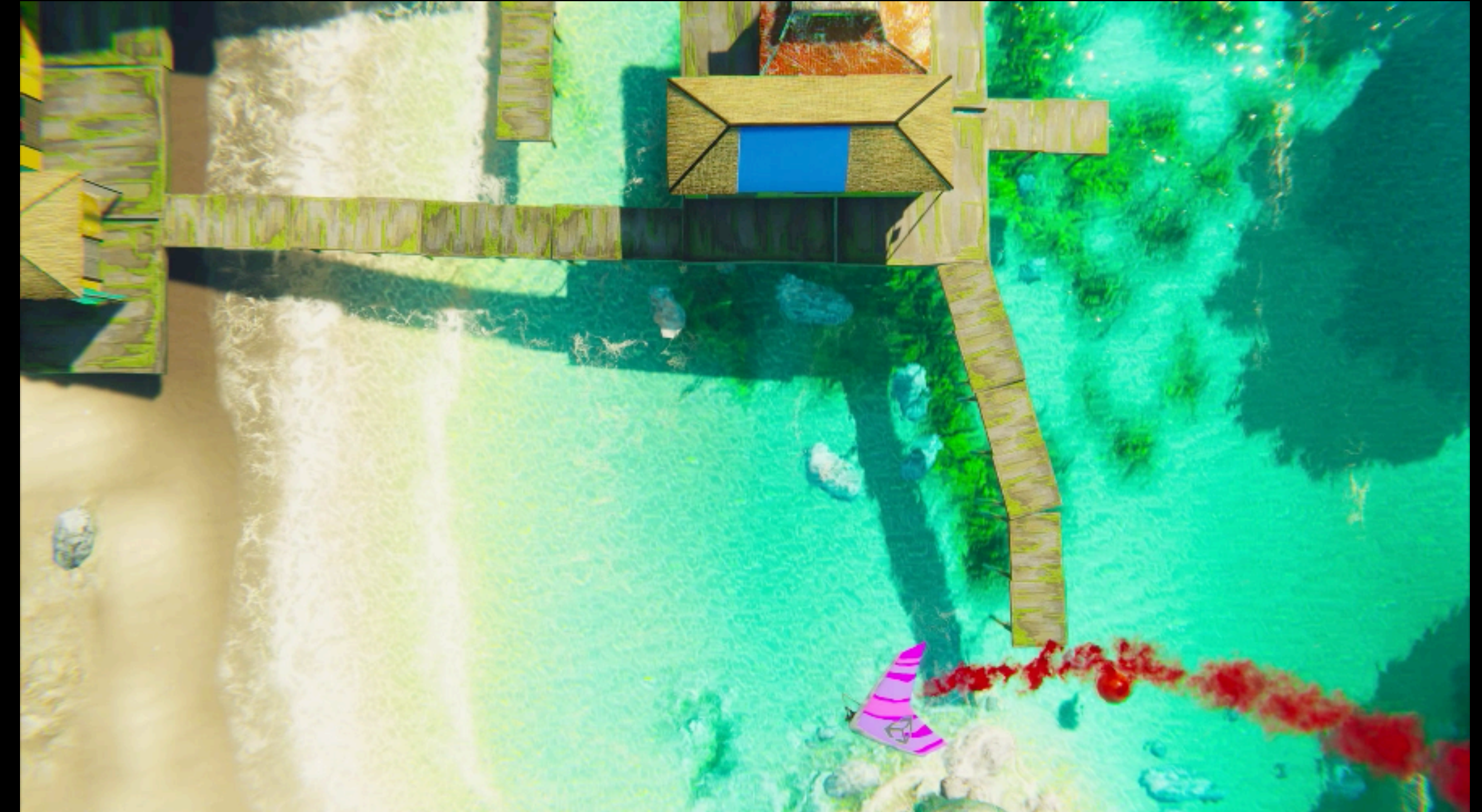
Released

Prerelease

In Development

We renamed the Lightweight Render Pipeline in 2019.3.

It's now the Universal Render Pipeline, a powerful solution that delivers beautiful graphics and performance while scaling to a wide range of platforms.





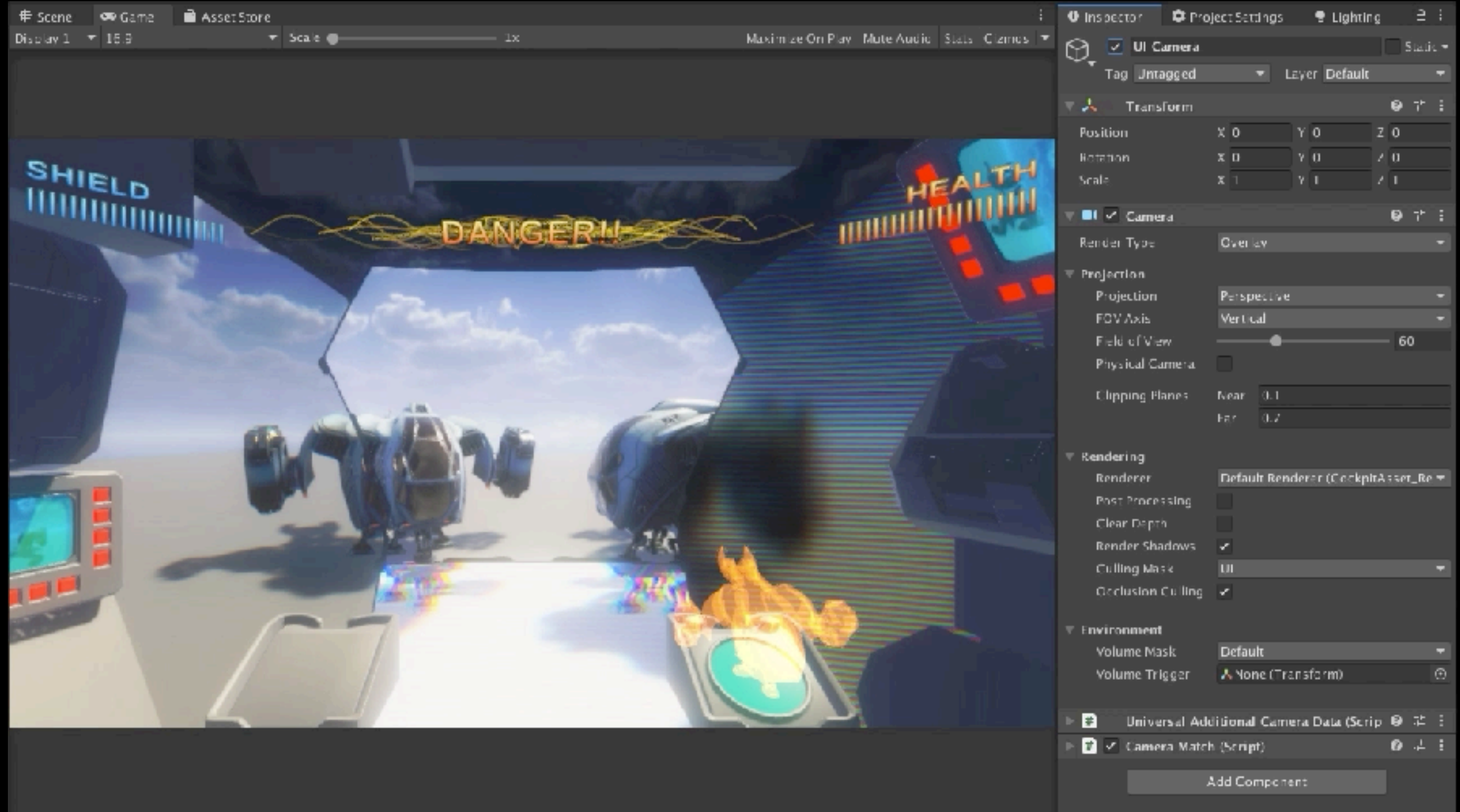


# Scalable Quality.

## Universal Rendering

Released      Prerelease      In Development

This release has been focused on stabilization and bug fixes. Additionally, we added support for multiple cameras.





# Scalable Quality.

Reaching your audience

## Universal Rendering

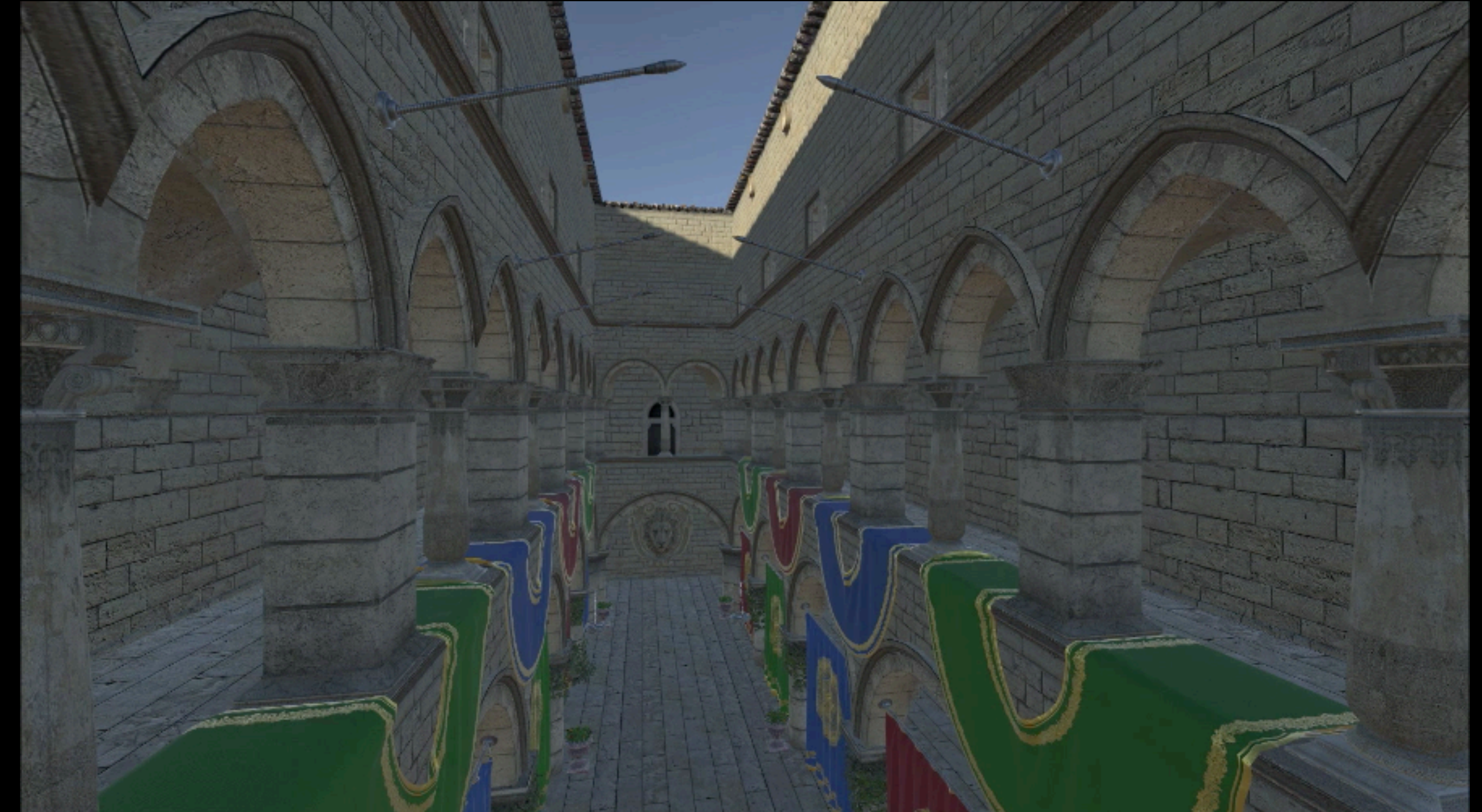
Released

Prerelease

In Development

We're working on improving Universal Render Pipeline's feature parity with our built-in renderer—our goal is to make Universal Render Pipeline the default render pipeline.

*Feature example shown— Ambient Occlusion.*

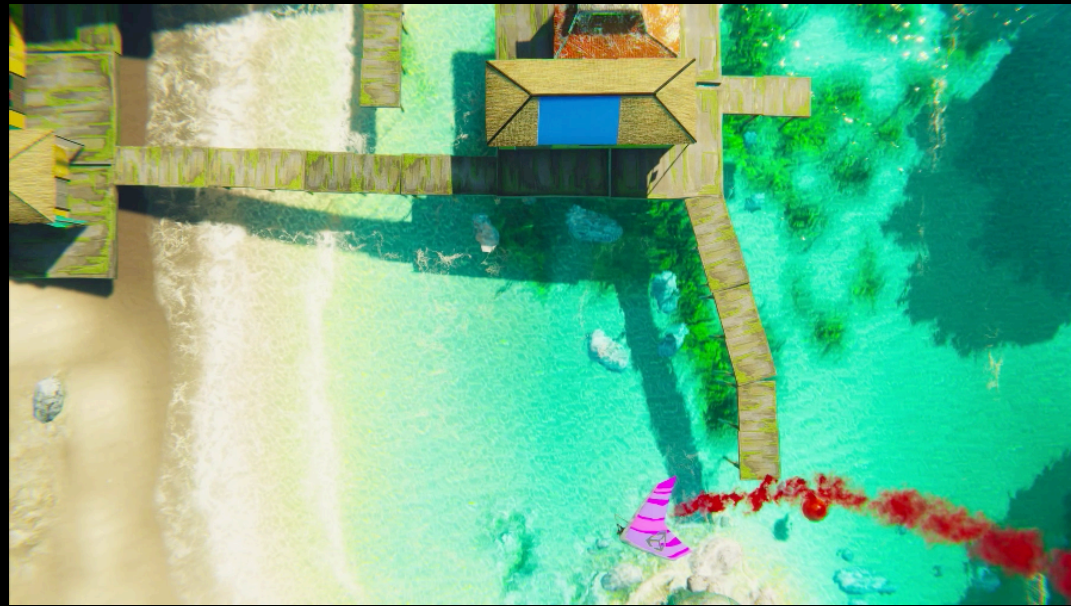




# Scalable Quality. Reaching your audience

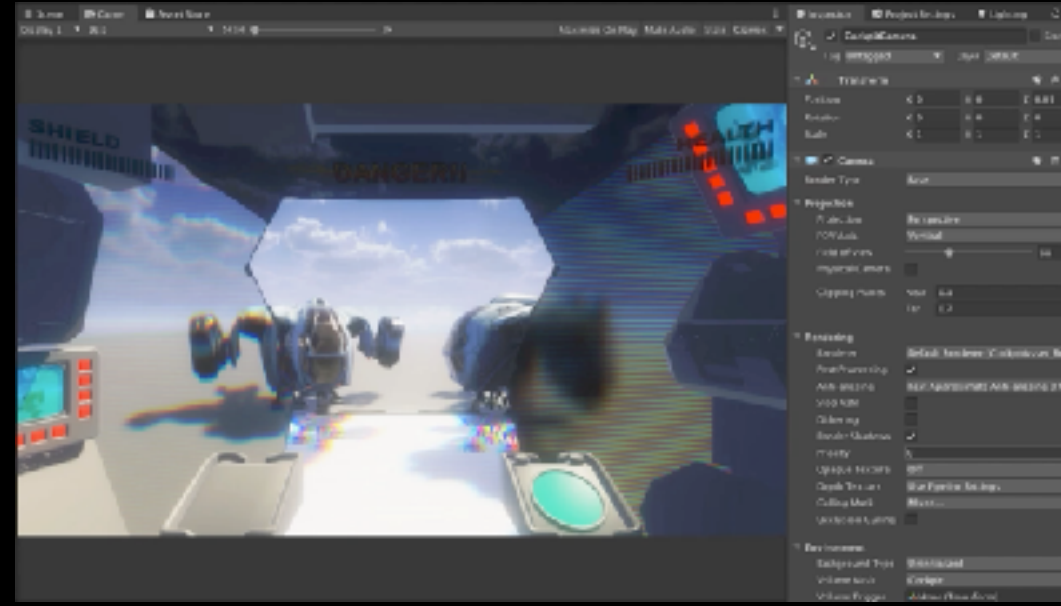
## Universal Rendering - highlights

### Released



- Optimized Post-Processing
- Shadow Mask Support
- Increased Light Limit

### Prerelease



- Bug fixes & stability improvements
- Camera stacking (package 7.2.0)

### In Development



- Ambient Occlusion Support
- Deferred Renderer
- Improved Shader Stripping
- Post Processing Custom Effects

# Scalable Quality.

Reaching your audience

## High Definition Rendering

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### The Mission

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**Achieve stunning, high-fidelity graphics  
on high-end hardware.**



# Scalable Quality.

## Reaching your audience

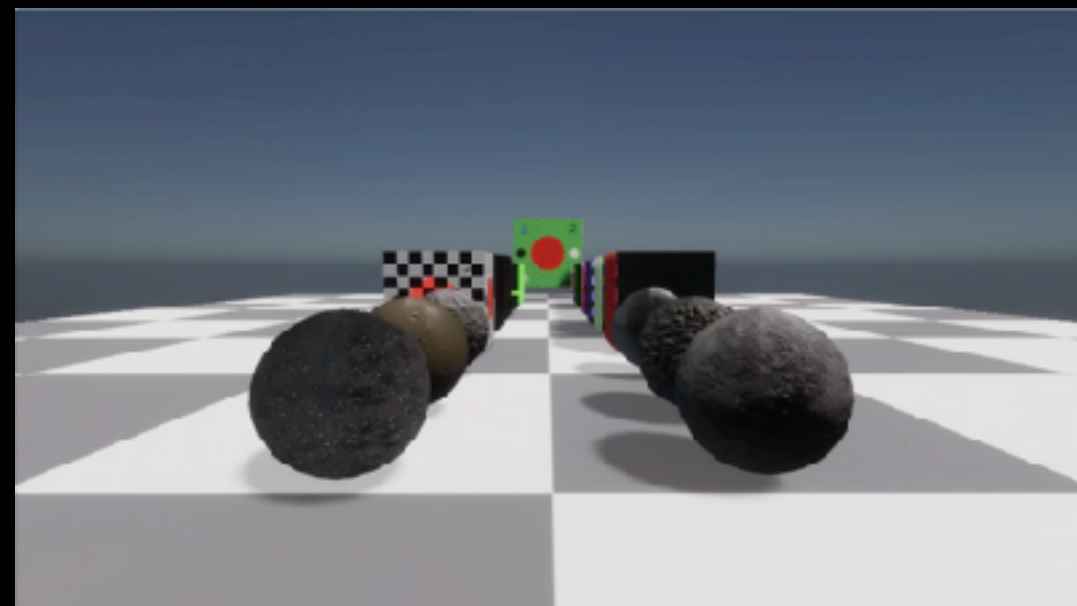
### High Definition Rendering

Released



HDRP is verified with 2019.3, a major milestone in our high definition rendering offering.

Prerelease



A major bug-fix and stability set of package releases are now available in Prerelease.

In Development



Streaming virtual texturing and HDRP, along with workflow and performance improvements.

# Scalable Quality.

## High Definition Rendering

Reaching your audience

Released

Prerelease

In Development

With 2019.3, package Version 7.2.0, HDRP is now out of Preview.

That means we guarantee stability, platform support, and will provide upgrade paths when needed.

We've also improved our extensibility with custom render passes and support for custom post processes.





# Scalable Quality.

## High Definition Rendering

Reaching your audience

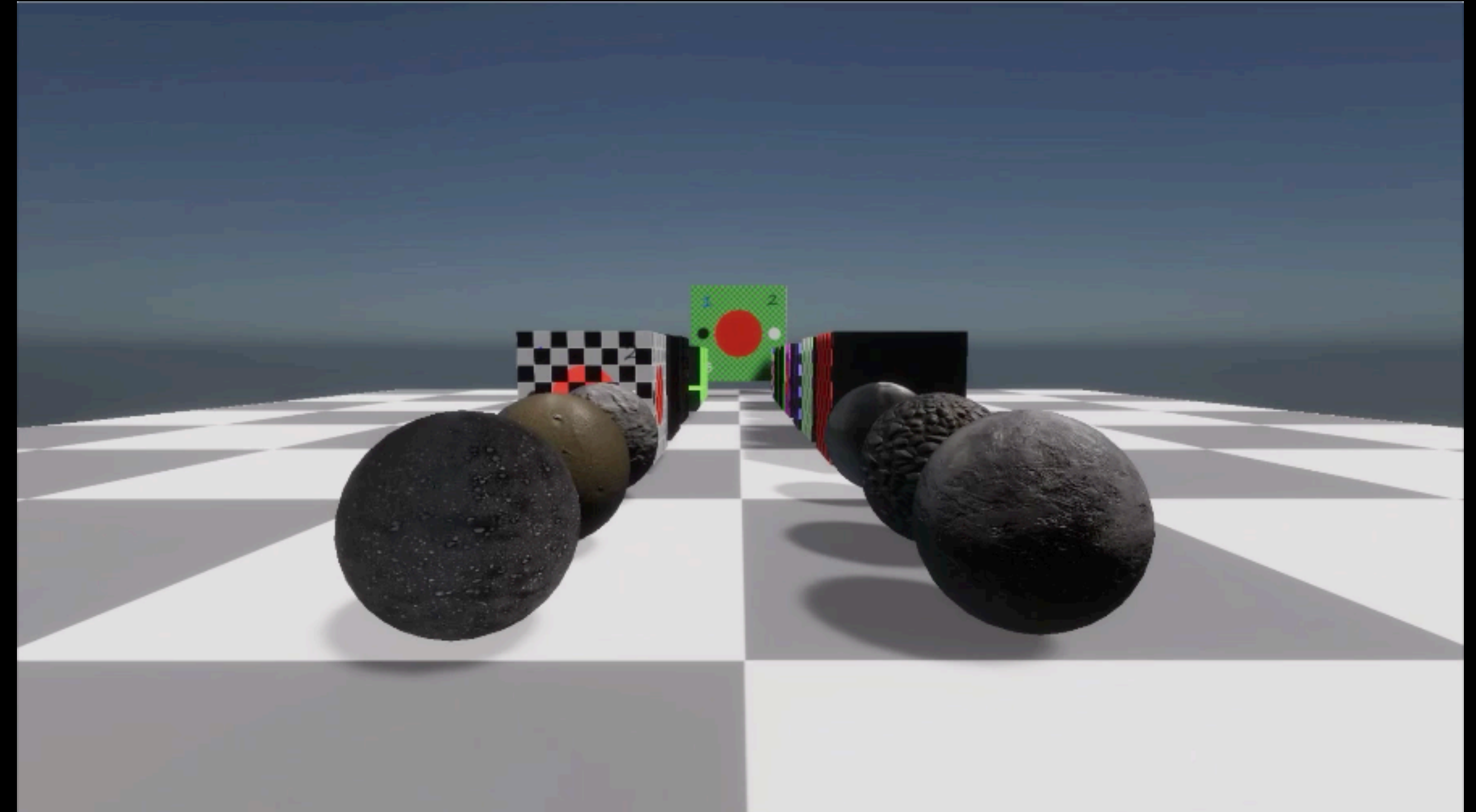
Released

Prerelease

..... In Development .....

Our HDRP 2020.1 release is focused on stabilization and bug fixing. Streaming virtual texturing is available in Unity 2020.1 beta as a test project using a custom version of HDRP.

This will be supported in HDRP using Shader Graph in one of the next 9.x-Preview releases.







# Scalable Quality.

## High Definition Rendering

Reaching your audience

Released

Prerelease

In Development

We are working on solidifying HDRP: Improving performance, adding more debugging tools, polishing our features, and improving artists' workflow.





# Scalable Quality. Reaching your audience

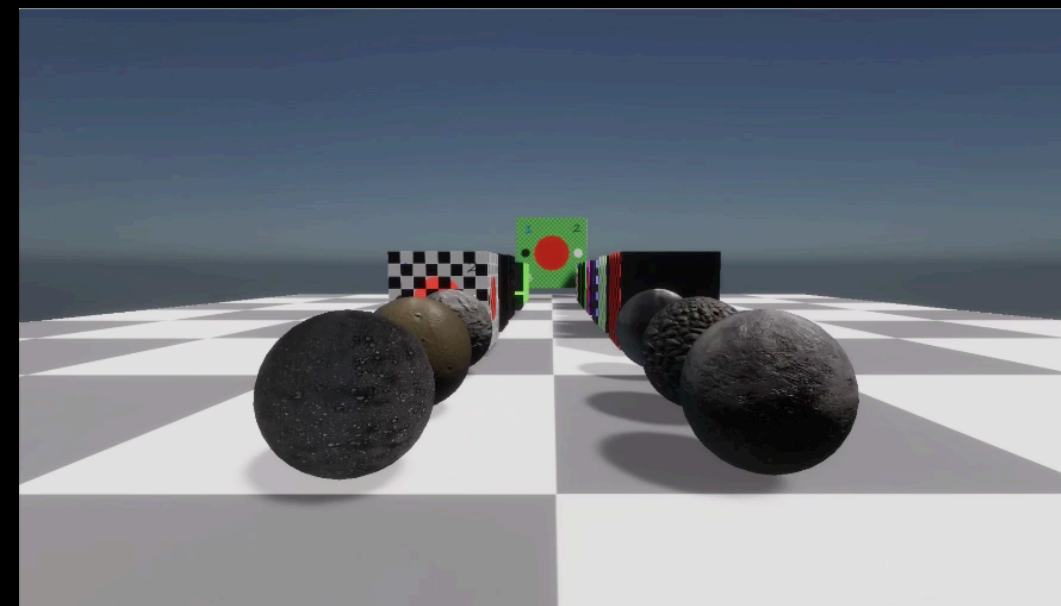
## High Definition Rendering - highlights

### Released



- Physically based Sky
- Look Dev
- HDRP scalability settings

### Prerelease



- Streaming Virtual Texturing test project
- HDRP
  - Stabilization & bug fixes
- Ray tracing Preview
  - Skinned/Blend Shape Meshes
  - Alembic Meshes
- Hybrid Renderer V2 Support

### In Development



- Decal layers
- HDR screen support
- Hybrid Renderer
- Integrated Streaming Virtual Texturing
- Procedural Virtual Texturing
- Raytracing Scalability Settings

# Scalable Quality. Reaching your audience

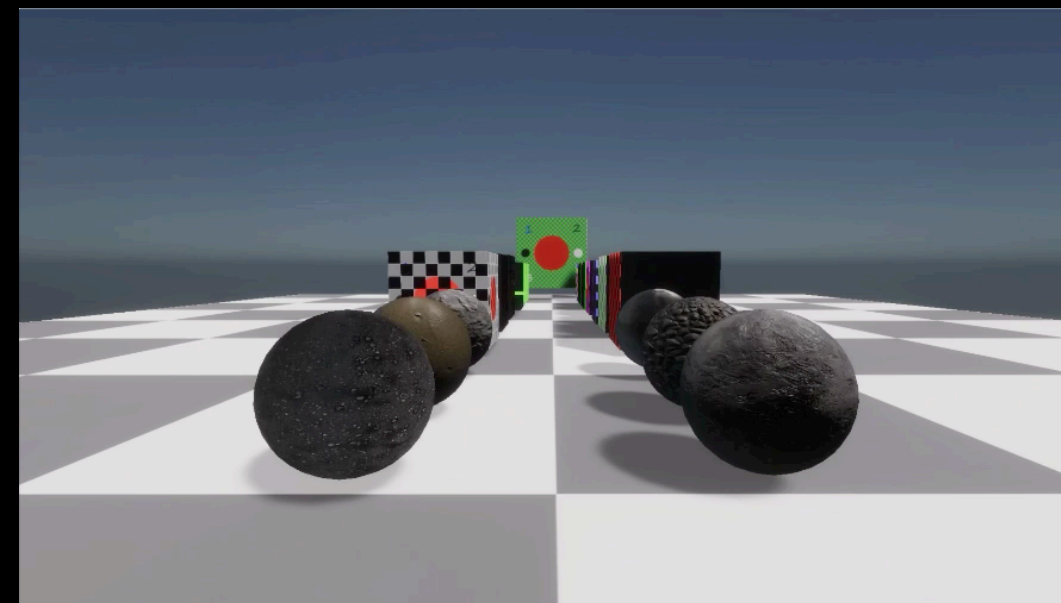
## High Definition Rendering - highlights

### Released



- Physically-based Sky
- Look Dev
- HDRP scalability settings

### Prerelease



- Streaming Virtual Texturing test project
- HDRP
  - Stabilization & bug fixes
- Ray tracing Preview
  - Skinned/Blend Shape Meshes
  - Alembic Meshes
- Hybrid Renderer V2 Support

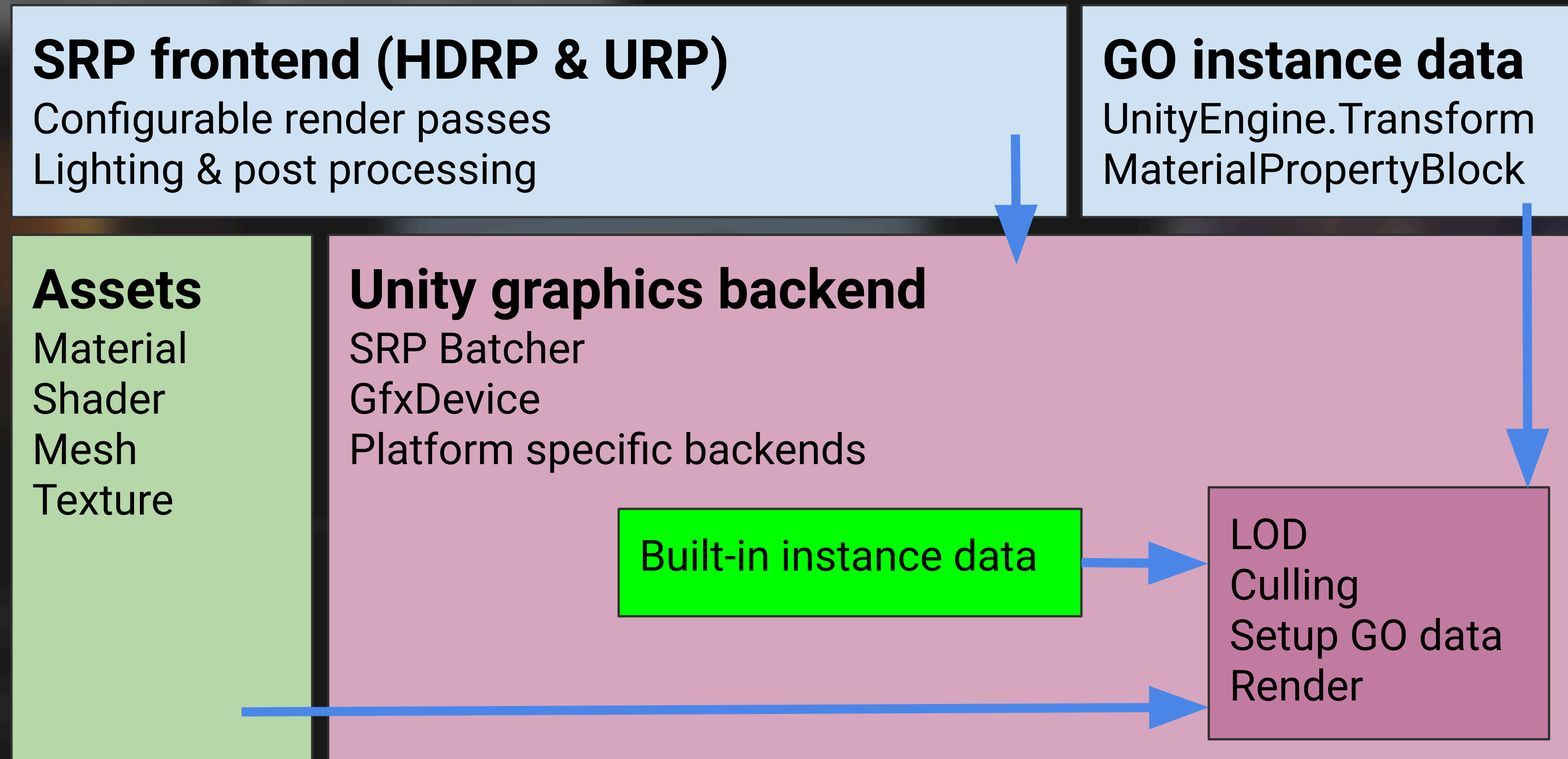
### In Development



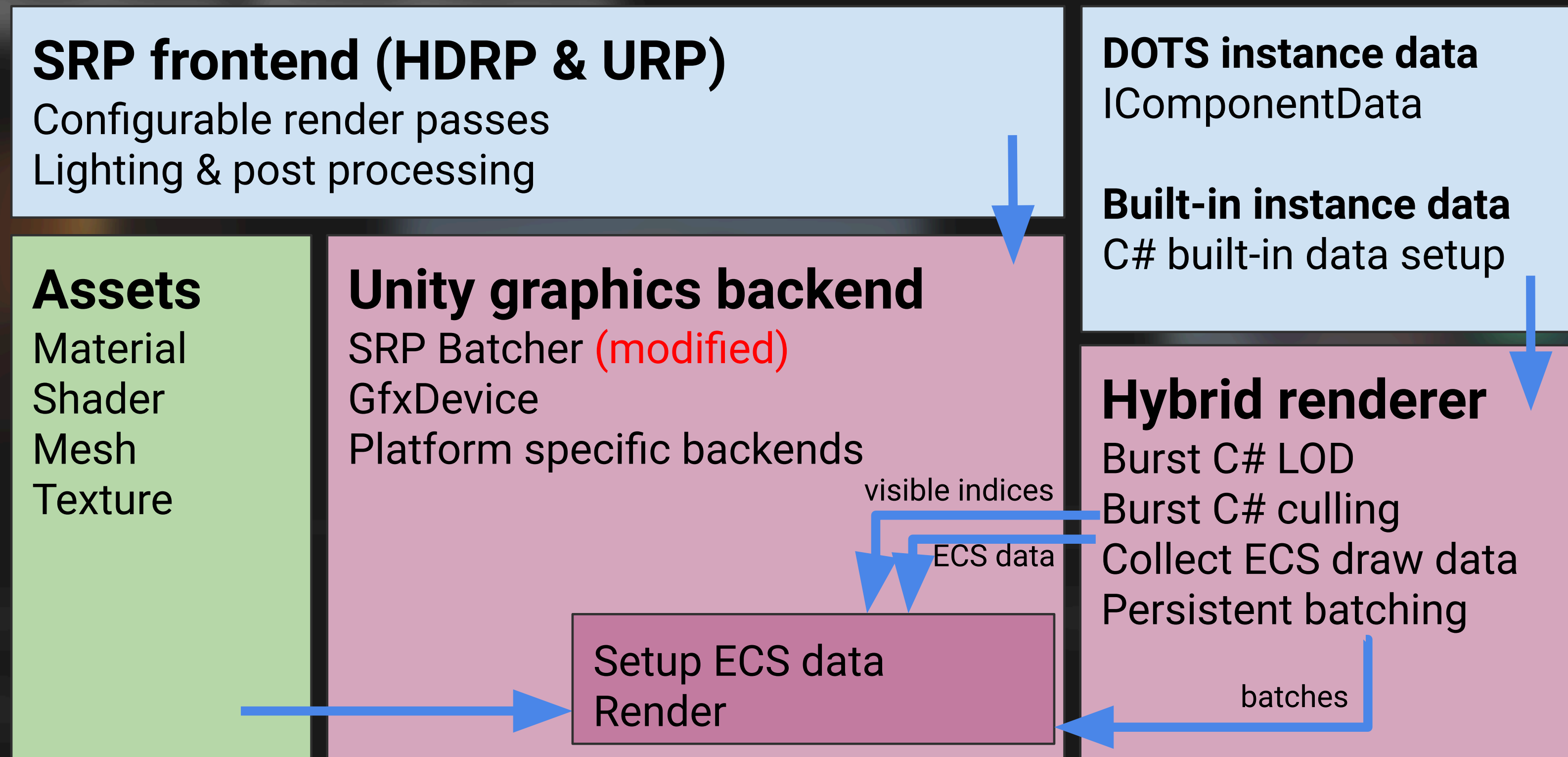
- Decal layers
- HDR screen support
- Hybrid Renderer
- Integrated Streaming Virtual Texturing
- Procedural Virtual Texturing
- Raytracing Scalability Settings



# Traditional GameObject rendering architecture



# Unity Hybrid DOTS rendering architecture

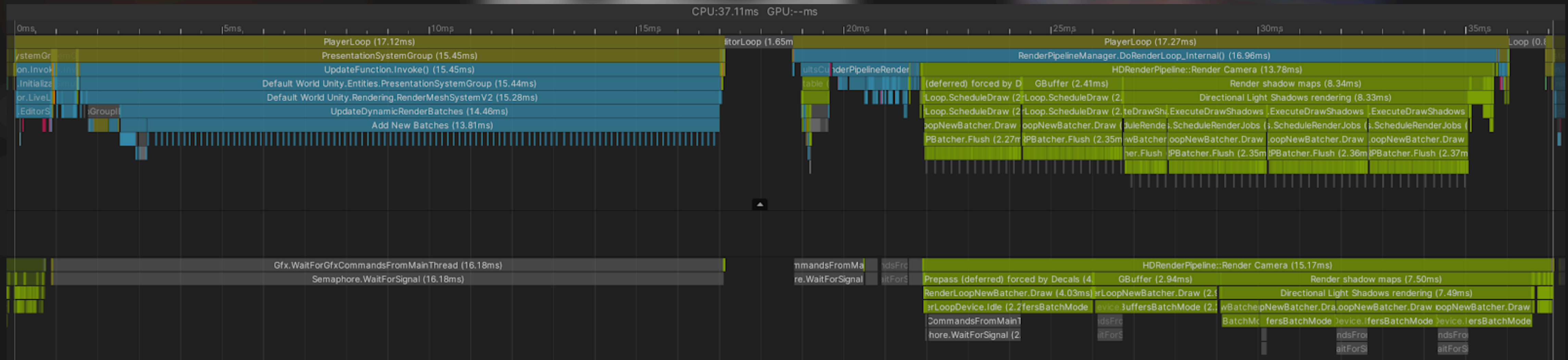




# Unity Hybrid renderer v1 performance

## 100k dynamic entities

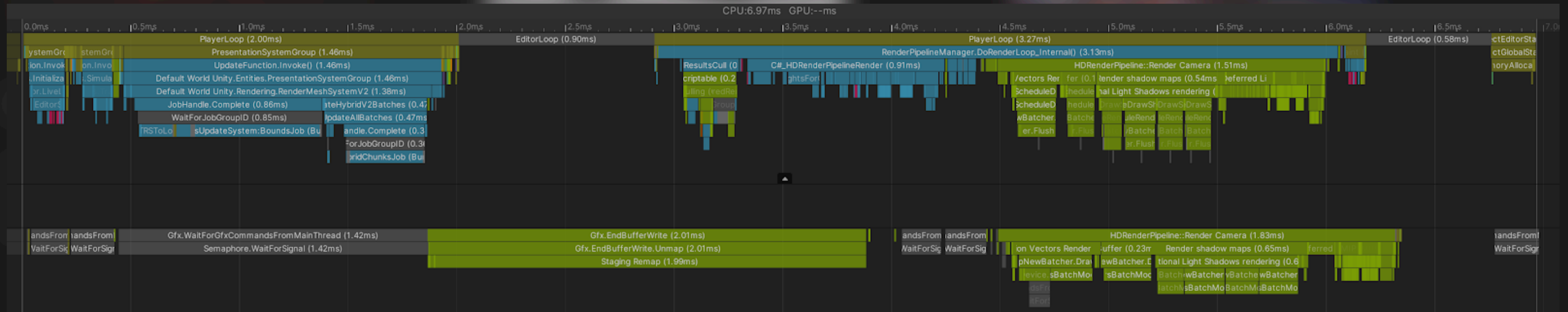
- AddBatches (main thread) = 13.8 ms
- HDRP (main thread) = 13.7 ms
- HDRP (render thread) = 15.1 ms
- Total frame time = 37.1 ms



# Unity Hybrid renderer v2 performance

## 100k dynamic entities

- AddBatches (all threads) = 0.47 ms (29.4x faster)
- HDRP (main thread) = 1.51 ms (9.1x faster)
- HDRP (render thread) = 1.83 ms (8.3x faster)
- CPU->GPU data copy (render thread) = 2.01 ms (new)
- Total frame time = 6.97 ms (5.3x faster)





# Scalable Quality. Reaching your audience

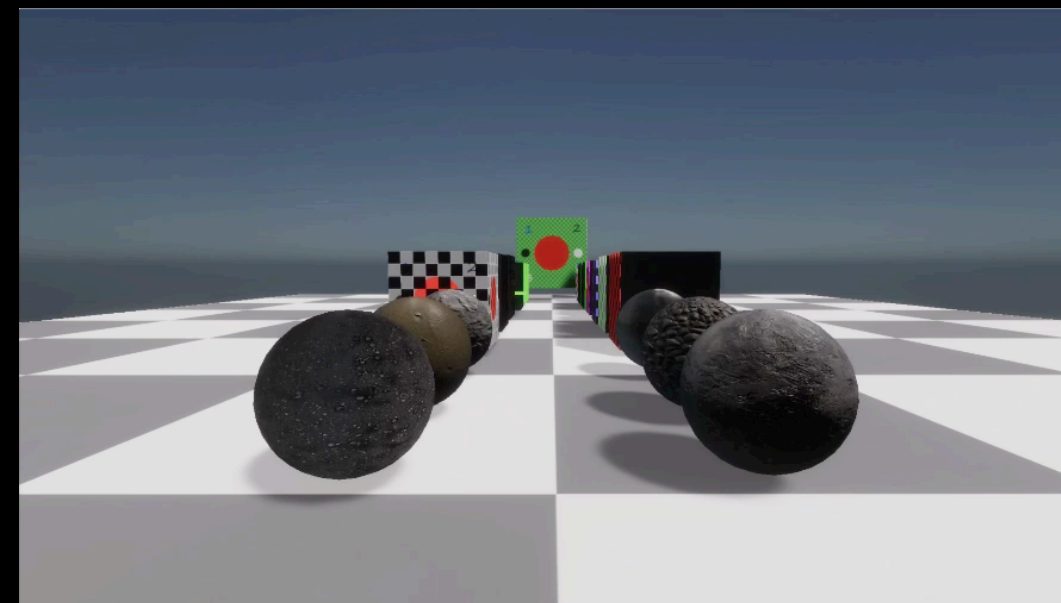
## High Definition Rendering - highlights

### Released



- Physically-based Sky
- Look Dev
- HDRP scalability settings

### Prerelease



- Streaming Virtual Texturing test project
- HDRP
  - Stabilization & bug fixes
- Ray tracing Preview
  - Skinned/Blend Shape Meshes
  - Alembic Meshes
- Hybrid Renderer V2 Support

### In Development



- Decal layers
- HDR screen support
- Hybrid Renderer
- Integrated Streaming Virtual Texturing
- Procedural Virtual Texturing
- Raytracing Scalability Settings

# Scalable Quality.

Reaching your audience

## Physics

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### The Mission

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**Empower you with the tools and workflows to build rich, interactive, and dynamic worlds.**

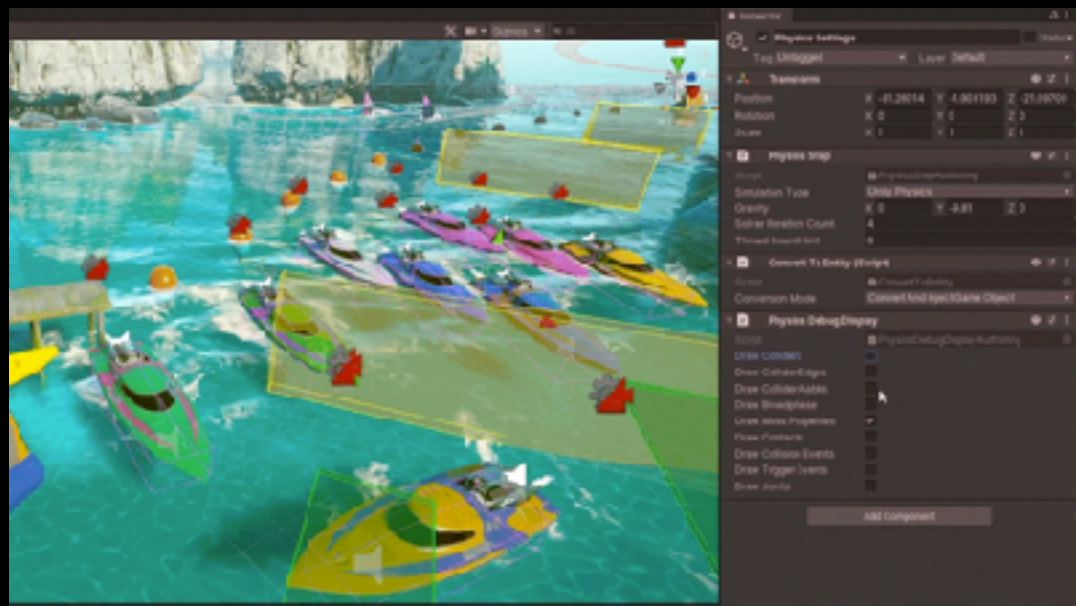




# Scalable Quality. Reaching your audience

## Physics

### Prerelease



Updates to PhysX and continued development of Unity Physics, and support for Havok Physics.

### In Development



Our goal is to deliver workflows that allow you to seamlessly blend between animation and physics-driven motion for believable characters.



# Scalable Quality.

Reaching your audience

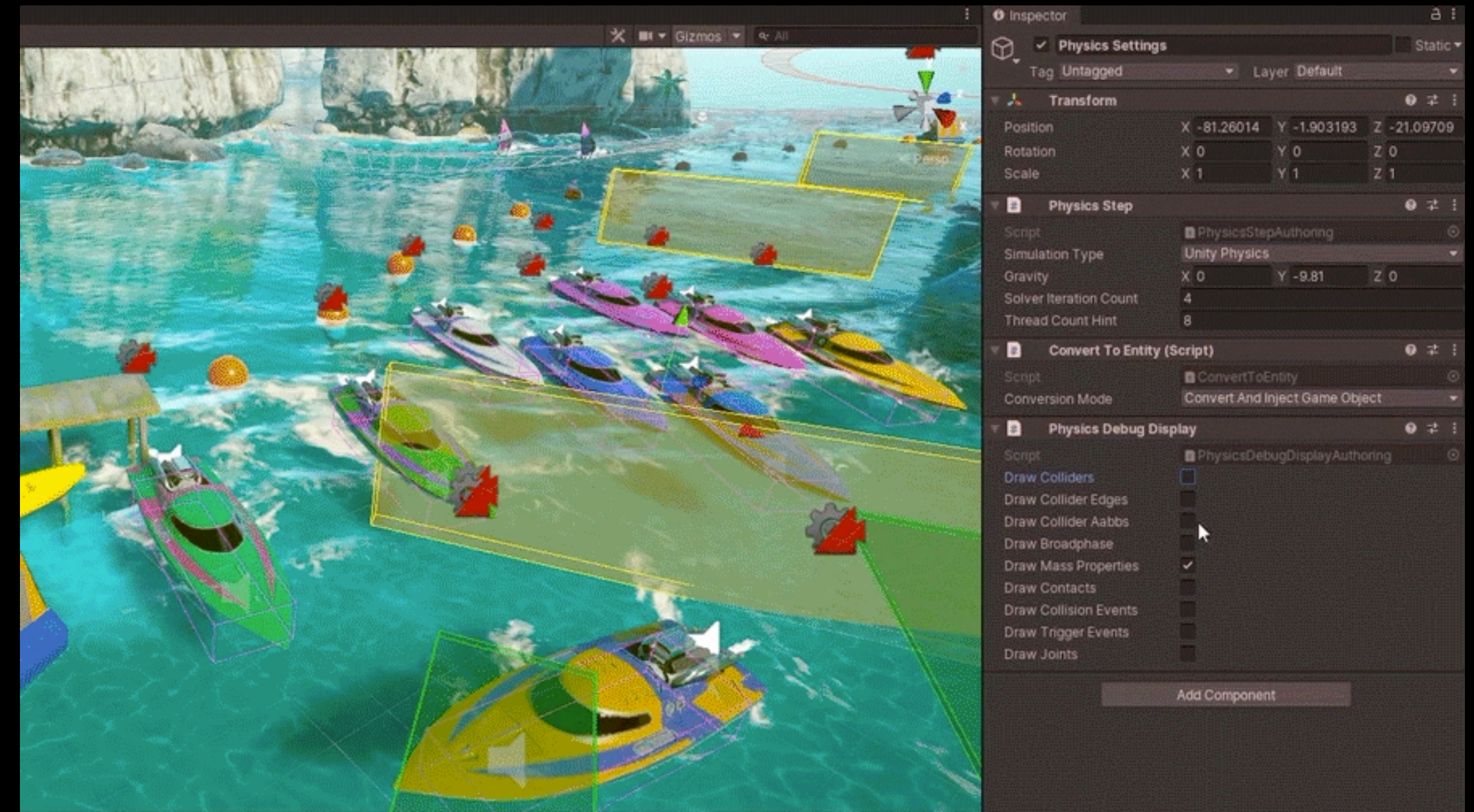
## Physics

### Prerelease

Unity Physics 0.3.0-Preview is currently available for users that need a lightweight, customizable, deterministic physics engine.

Havok Physics 0.2.0-Preview is currently available for users with ambitious physics requirements and want to use a high-end physics solution that has been used in over 600 shipped games.

### In Development





# Scalable Quality.

Reaching your audience

## Physics

### Prerelease

We are working on improvements and enhancements to the tooling and workflows for ragdolls and joints. Our goal is to deliver workflows that allow you to seamlessly blend between animation and physics-driven motion for believable characters.

We are continuing to iterate on the character controller sample to ensure it meets the standards and requirements for believable character motion.

### In Development



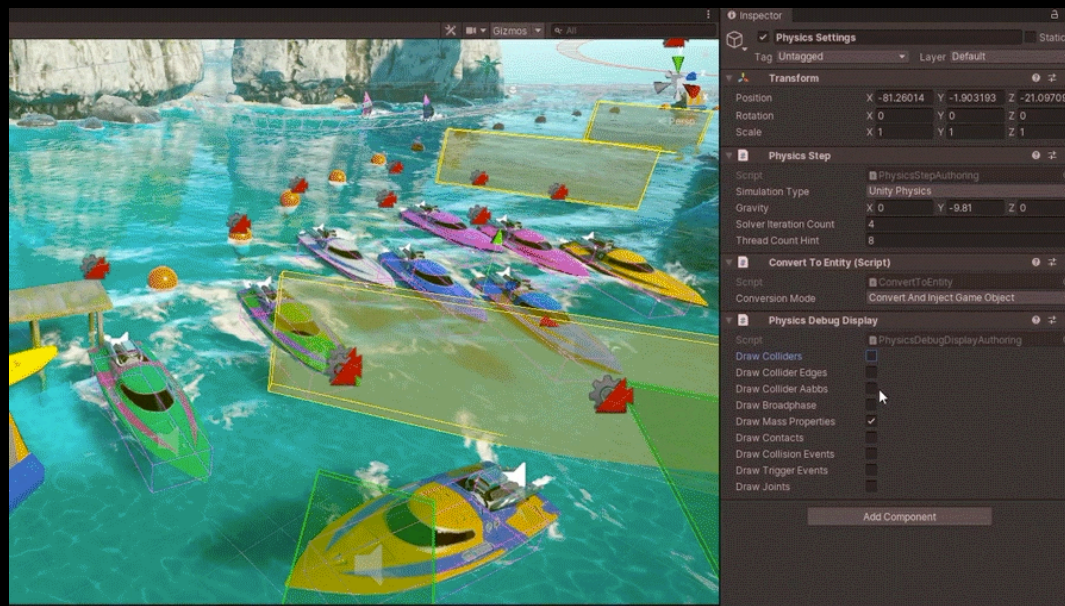


# Scalable Quality.

Reaching your audience

## Physics - highlights

### Prerelease



- Unity Physics
  - Terrain collider (0.2.5-Preview)
  - Single threaded immediate mode Simulation (0.3.0-Preview)

- Havok Physics support
  - Preview package (0.2.0)

### In Development



- Unity Physics simulation stability improvements
- Physics-based animation
- Ragdolls and joints
- Character Controller



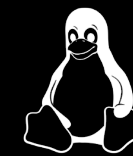
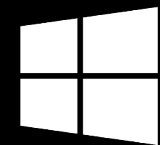
# Reaching your audience.

**Our fourth guiding principle is to  
make it as easy as possible to  
take your content anywhere your  
users want you to be.**



# Reaching your audience.

iOS



PS4



Gear  
VR



androidtv



tvOS





# Reaching your audience.

## Connected Games

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### The Mission

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**Make scalable, highly optimized online experiences with everything you need to make them easier to build and cost-effective to run.**

# Reaching your audience.

## Connected Games

Released



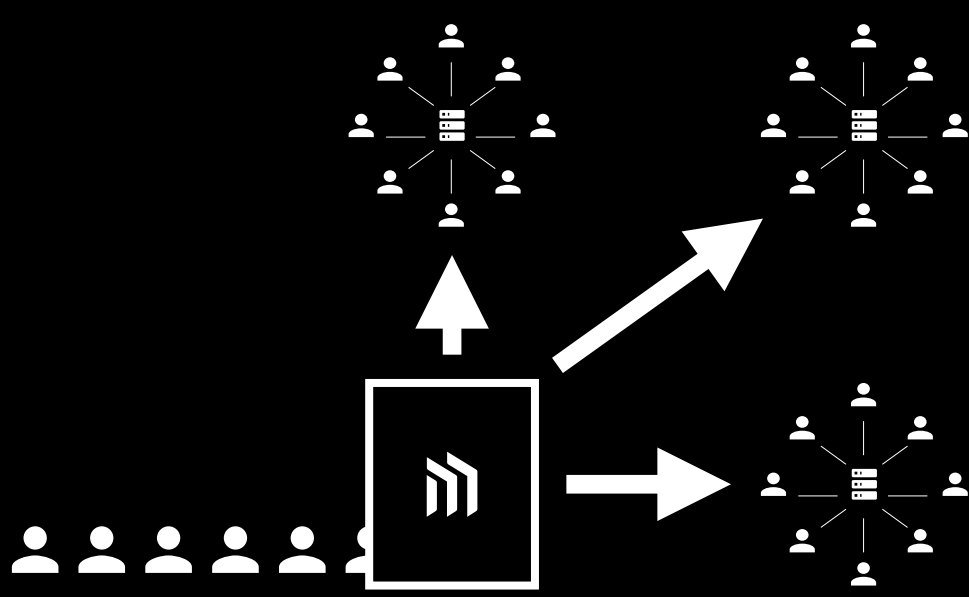
Offering solutions for multiplayer game challenges through our voice, analytics and server management services.

Prerelease



Solutions for match-making and server runtime. Preview versions of Unity Transport and NetCode are available.

In Development



This coming year will be largely focused on creating end-to-end systems that integrate and tie all of our connected games services together to form a holistic solution.



# Reaching your audience.

## Connected Games

Released

Prerelease

In Development

We are offering solutions for multiplayer game challenges through Vivox (our voice service), Multiplay (our game-hosting service), and deltaDNA (our analytics service).

They provide the foundation you need to operate at an incredible scale.



# Reaching your audience.

## Connected Games

Released

Prerelease

In Development

To further empower you to connect your players together and more easily build your server simulation logic, we are working on Matchmaker and improving our Server Runtime.

Preview versions of Unity Transport and NetCode are available. They were released to support the DOTS Sample which shows how DOTS-driven simulation and replication work together in a fully driven DOTS application.

We also upgraded Unity Transport to adopt our new underlying platform base libraries for extended platform reach and support for IPv6.





# Reaching your audience.

## Connected Games

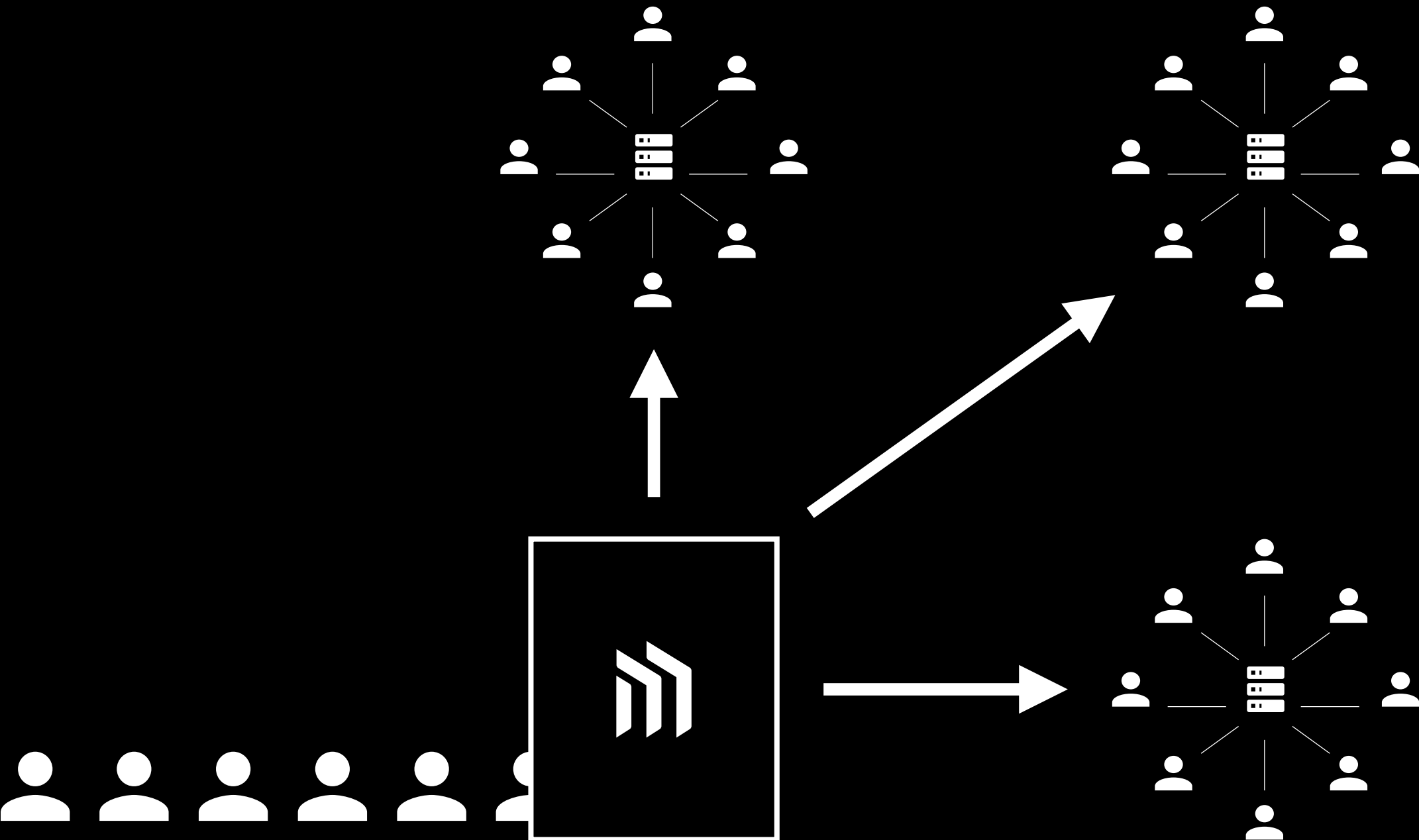
Released

Prerelease

In Development

This coming year will be largely focused on creating end-to-end systems that integrate and tie all of our connected games services together to form a holistic solution.

We continue to expand the capabilities of the Unity Transport and NetCode packages. Our focus is on developing an intuitive and performant solution for all network play that can be used by everyone.



# Reaching your audience.

## Connected Games - highlights

### Released



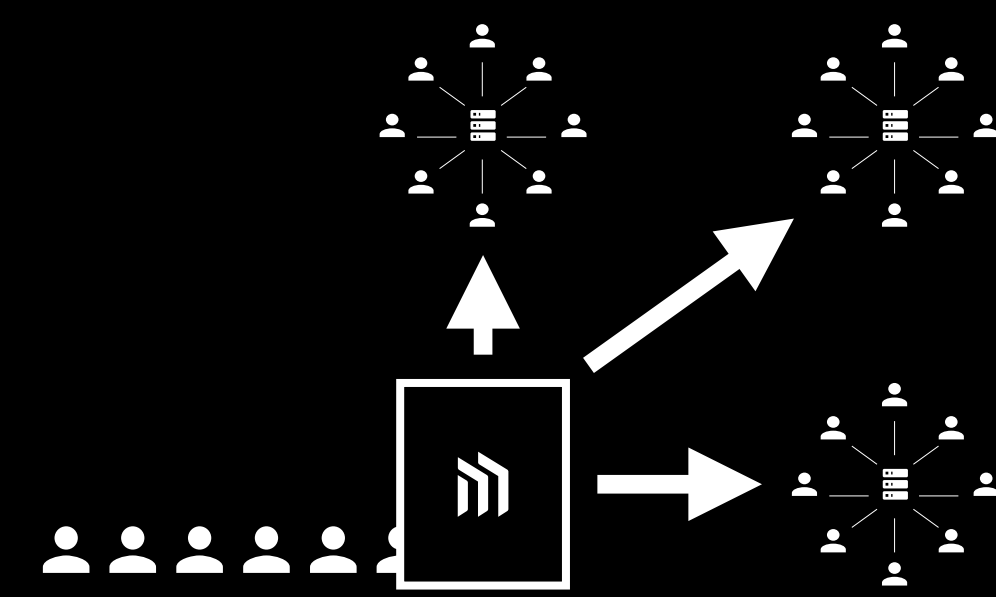
- Multiplay
  - Game server orchestration tools
  - Global datacenter coverage
  - Multi-cloud implementation
- Vivox - integrated voice chat, instant Messaging
- deltaDNA - targeting & data mining
- Server Runtime - Linux IL2CPP Support

### Prerelease



- Server Runtime Improvements
  - Windows/macOS to Linux Cross-Compilers
  - Scriptable PlayerLoop Editor
- Matchmaking closed beta
  - Custom match functions & fast time to match
- deltaDNA - Predictive churn segments
- Transport and NetCode for DOTS sample (Preview)
- Unity Transport
  - Refactored backend, extending platform reach
  - Support for IPv6

### In Development



- DOTS Server Runtime
- Encryption for Unity Transport
- Unity NetCode
  - Simplifying setup of replication ghost
- Lobby - persistent connection & offline mode
- Friends - cross platform



# Reaching your audience.

## Mobile Platforms

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### The Mission

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**Enable optimal performance and stability  
across low to high-end mobile devices,  
and improve iteration times.**



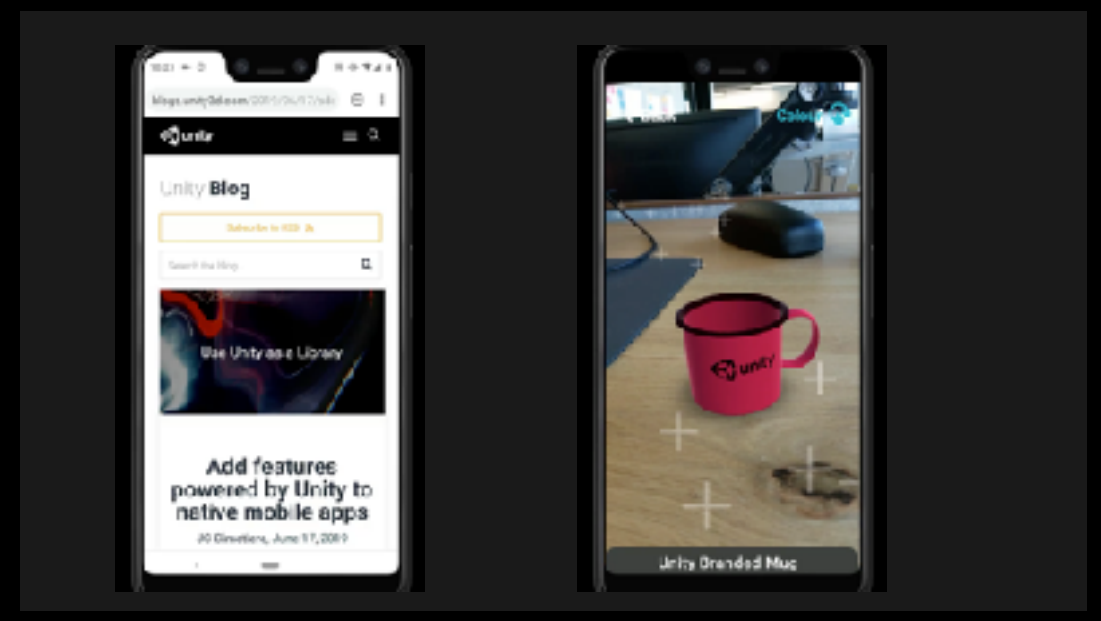
# Reaching your audience.

## Mobile Platforms

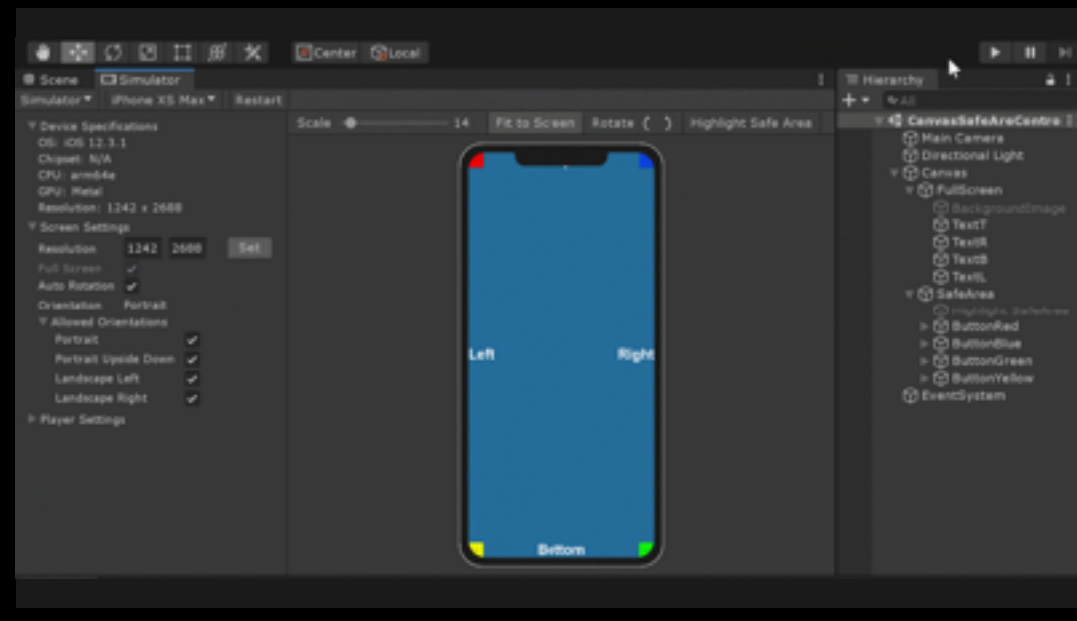
Released

Prerelease

In Development



We delivered Unity as a library, many rendering improvements and tools to help you iterate quickly and control performance.



We are improving iteration time with Device simulator.



We continue to improve the Universal Render Pipeline, along with better workflow improvements too.



# Reaching your audience.

## Mobile Platforms

### Released

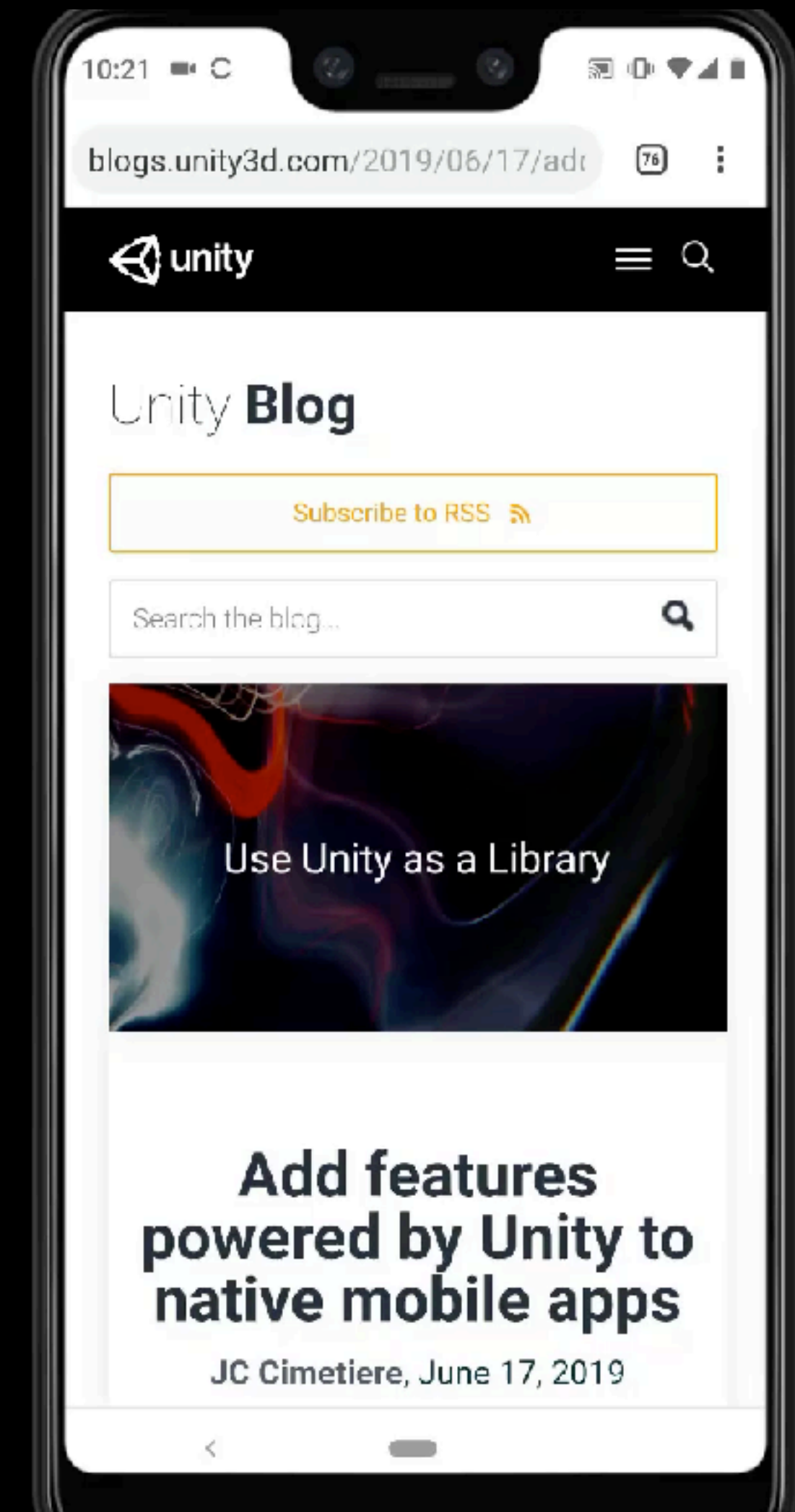
### Prerelease

### In I

We enabled using Unity Runtime as a library inside iOS & Android apps to power various scenarios including AR.

Meanwhile, we added various rendering improvements and introduced new tools to speed up development and iteration time.

Get device performance status and thermal trends to proactively adjust performance and quality settings with Adaptive Performance on Samsung devices.



# Reaching your audience.

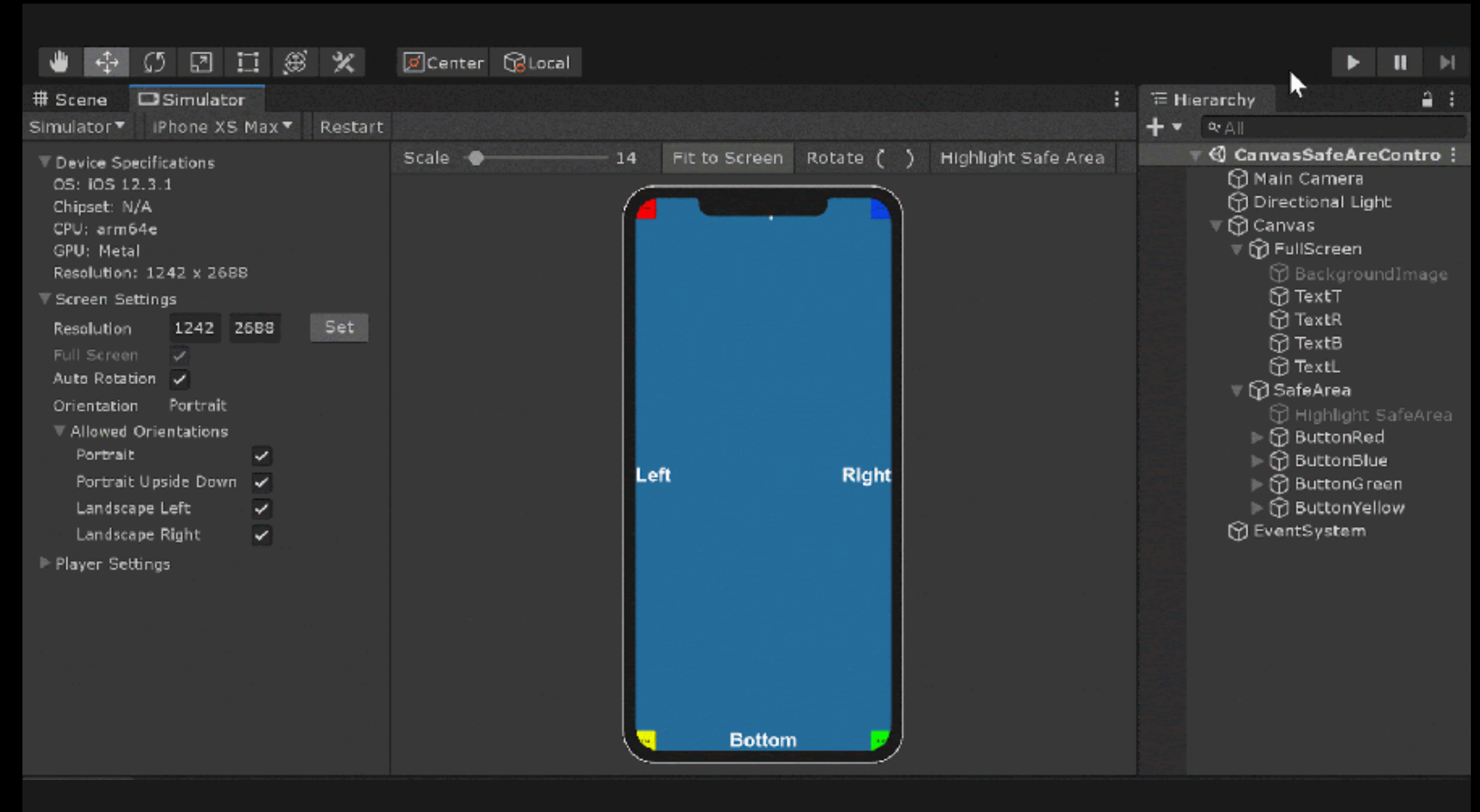
## Mobile Platforms

Released

Prerelease

In Development

We are improving iteration time with the Device Simulator, enabling fast previsualization in the Editor Game View for many different devices.





# Reaching your audience.

## Mobile Platforms

Released

Prerelease

In Development

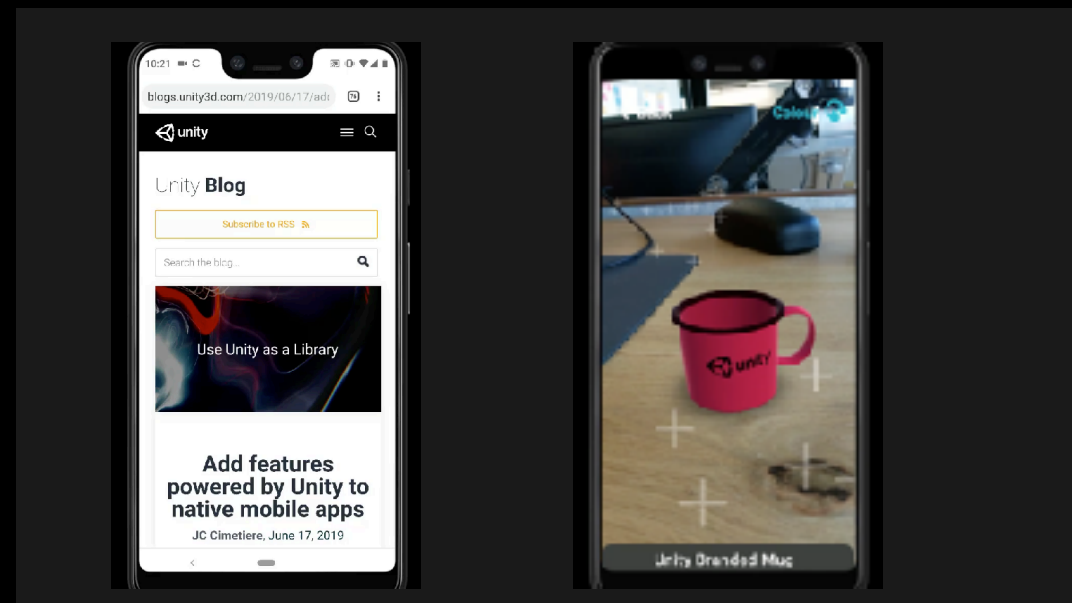
We continue to improve the Universal Render Pipeline with refinement for iOS/Metal and Android/Vulkan, while also pushing on various tools for faster iteration.



# Reaching your audience.

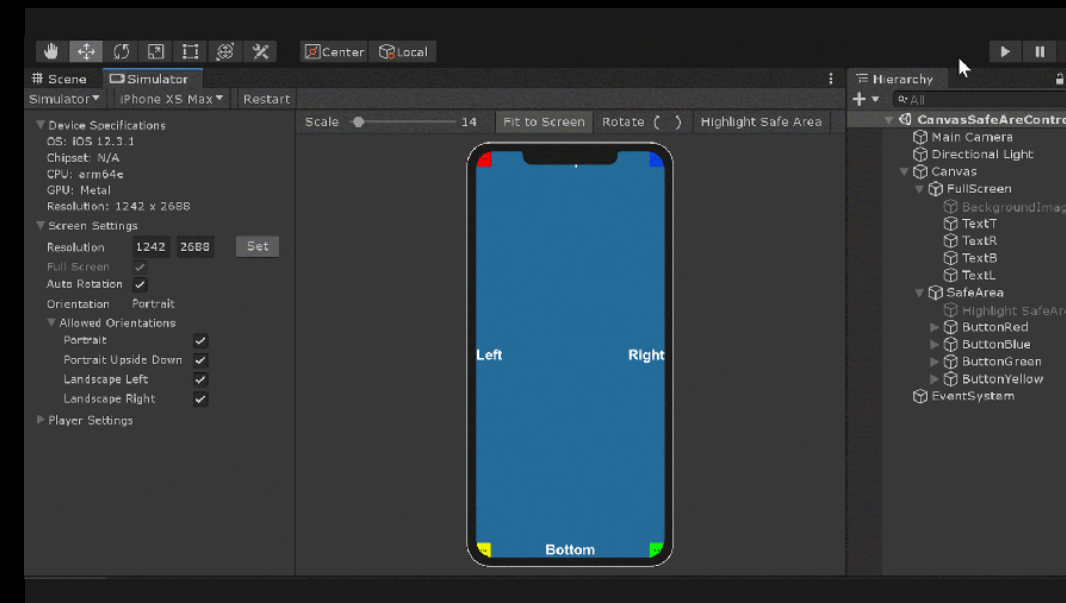
## Mobile Platforms - highlights

### Released



- Unity as a Library
- On-Demand Rendering
- Optimized Frame Pacing
- Local Shader Keyword
- Iteration - Scripts Only patching (Android)
- Android Logcat integration
- Mobile Notifications
- Android ARM 64bit support to 2017LTS
- Adaptive Performance

### Prerelease



- Device Simulator

### In Development



- Metal & Vulkan improvements
- Support for iOS/Android new versions



# Reaching your audience.

## Project Tiny

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### The Mission

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**Empower you to build instant games  
and experiences across mobile and  
web, with the most optimal file size and  
load times.**

# Reaching your audience.

## Project Tiny

### Prerelease



Project Tiny Preview is built on the new DOTS Runtime, using the same Editor authoring experience that you're used to.

### In Development



We are improving and extending 3D & 2D rendering and all Preview features.



# Reaching your audience.

## Project Tiny

### Prerelease

### In Development

Project Tiny Preview is built on the new DOTS Runtime, using the same Editor authoring experience and build support for iOS, Android and Web (WASM/ASMJS) as you're used to.

Current Preview includes 3D rendering, 3D Physics, basic animation/input/audio, 2D foundation for rendering and collision detection.



# Reaching your audience.

## Project Tiny

Prerelease

We are improving and extending 3D & 2D rendering and all Preview features.

We will support a subset of UIElements for UI authoring, as well as more platform specific features like single HTML export which enables Playable Ads, mobile lifecycle events and more.

In Development





# Reaching your audience.

## Project Tiny - highlights

### Prerelease



- 3D rendering and Physics
- Basic animation/input/audio
- 2D foundation for rendering and physical collision detections
- Initial platform support: iOS, Android and Web (WASM/ASMJS)

### In Development



- Improvement of current features in Preview
- Single HTML export for Playable Ads
- Mobile lifecycle events
- UIElements subset

# Reaching your audience.

## XR Platforms

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### The Mission

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**Make it as easy as possible to create  
AR/VR/MR experiences for any device  
and form factor, with best possible  
performance.**



# Reaching your audience.

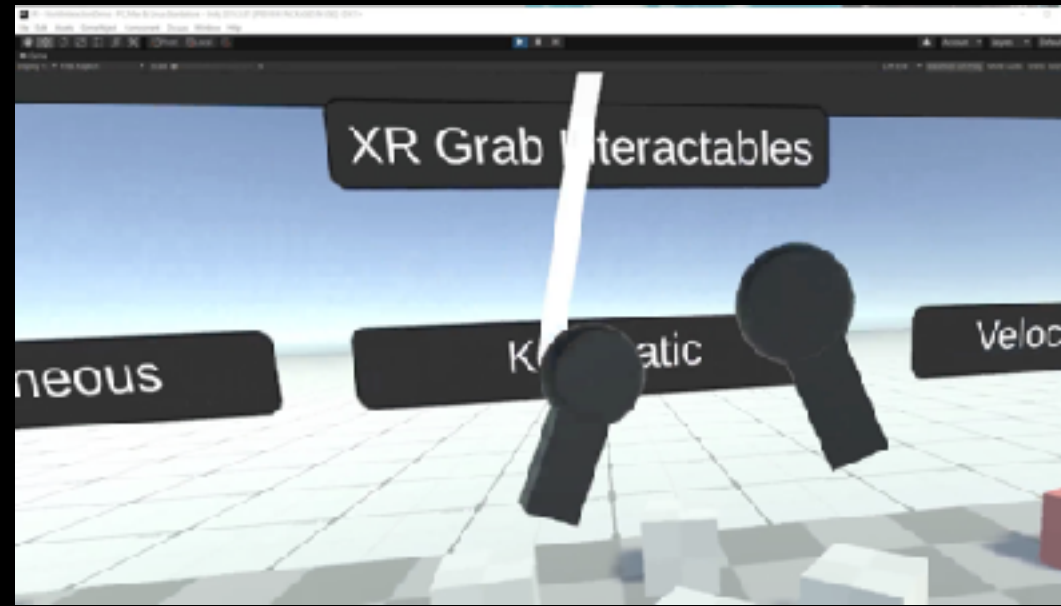
## XR Platforms

### Released



New plugin-framework for platform integrations, continued improvements to AR Foundation, and state-of-the-art rendering for VR.

### Prerelease



Easily add input & interactions to your AR/VR experience with our XR Interaction Toolkit, compatible across all supported platforms.

### In Development



Continued focus on engine-level optimizations and improving the first-touch experience for developers.



# Reaching your audience.

## XR Platforms

Released

Prerelease

In Development

For XR platform integrations, we migrated to a new and open plug-in framework called XR SDK, which unlocks performance optimizations for hardware vendors.

AR Foundation continues to be one of the leading frameworks for AR development. It's built on top of our XR SDK and extends support for both handheld & headworn AR devices.

On the graphics side, HDRP support for VR utilizes state-of-the-art rendering to enable immersive & photorealistic VR experiences.





# Reaching your audience.

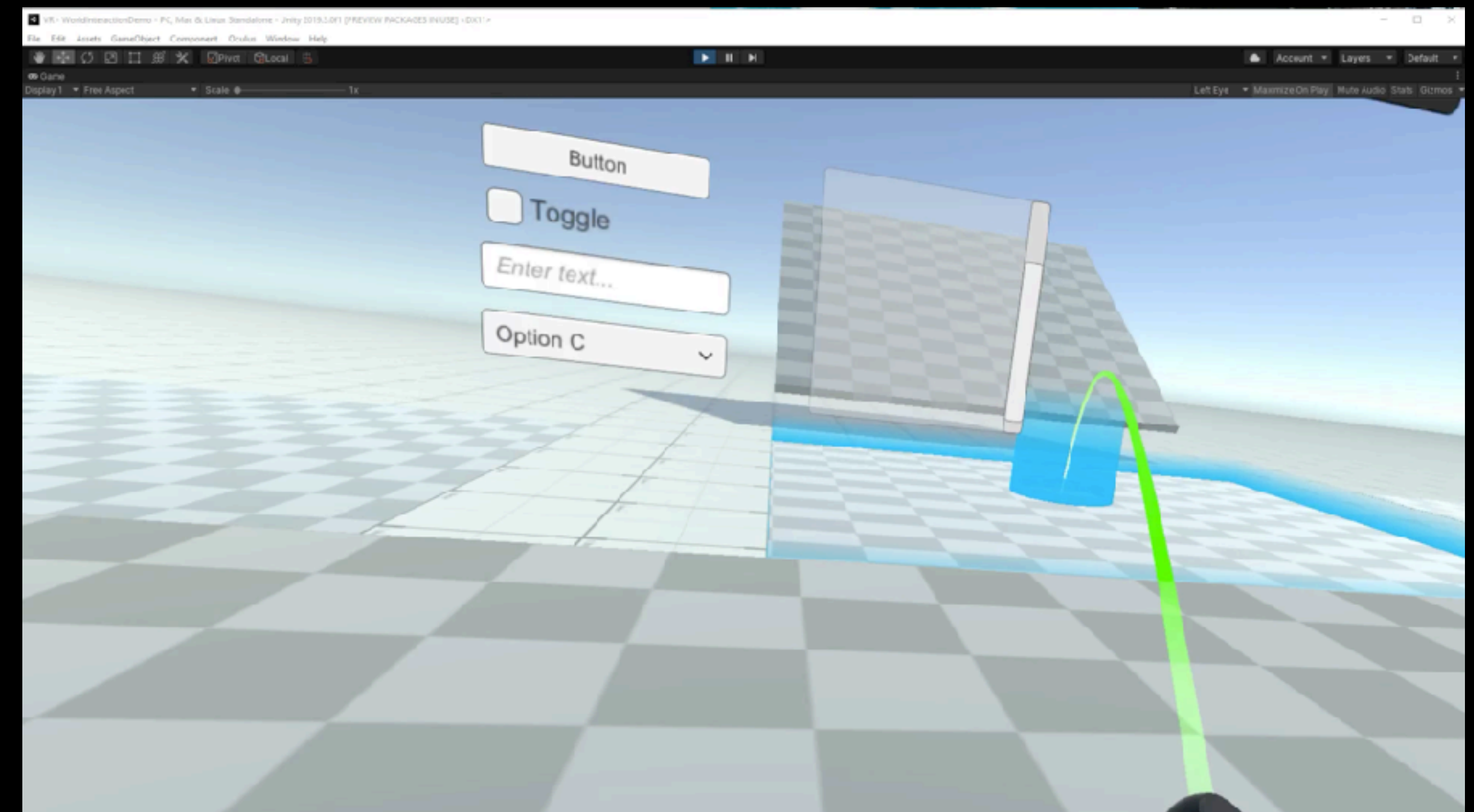
## XR Platforms

Released

Prerelease

In Development

The XR Interaction Toolkit enables you to add interactivity to your AR/VR experiences without having to code the interactions from scratch.





# Reaching your audience.

## XR Platforms

Released

Prerelease

In Development

We continue to focus on engine-level graphics optimizations to deliver best possible performance of your XR experiences.

On-device remoting for handheld AR will help speed up development and improve iteration time.

We are working on improving the first-touch experience for developers with enhanced project templates and sample projects.





# Reaching your audience.

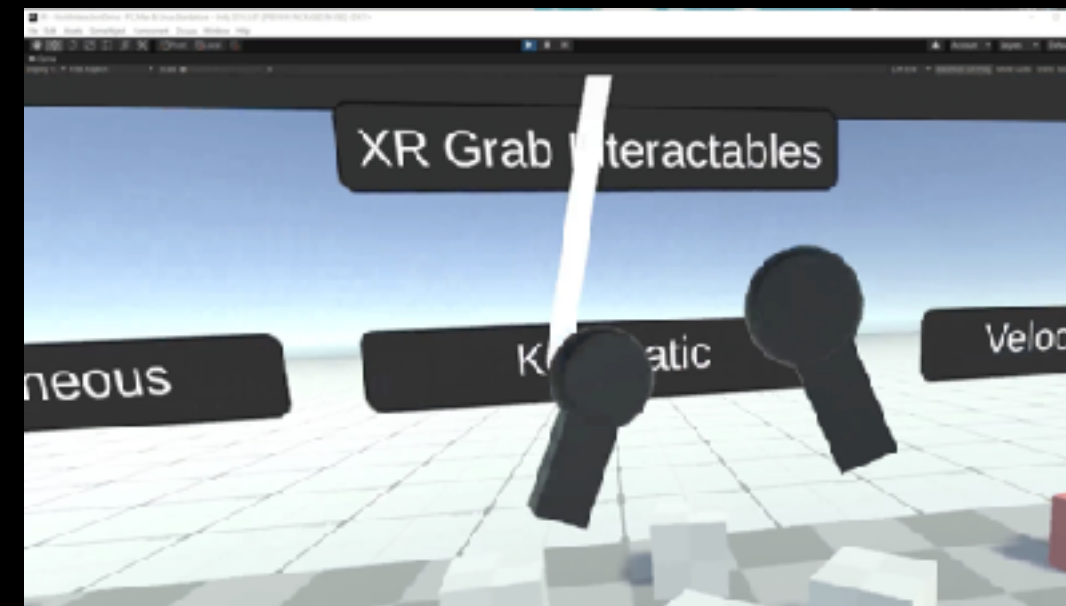
## XR Platforms - highlights

### Released



- Migrated platform integrations to support XR SDK
  - ARCore & ARKit XR Plugins
  - Magic Leap XR Plugin
  - Oculus XR Plugin (Quest, Rift, Rift S, Go)
  - Windows XR Plugin (WMR & HoloLens)
- URP and HDRP support for XR
- AR Foundation support for HoloLens & Magic Leap

### Prerelease



- XR Interaction Toolkit
- Vulkan support for Oculus Quest

### In Development



- Further URP and HDRP investments
- Further Vulkan performance improvements
- UX improvements to XR Plugin Management
- On-device remoting for handheld AR
- XR project templates
- Evolving AR Foundation features & enhancements
- Valve nearing completion of OpenVR XR Plugin



# Summary.

- **Reliability & performance**
- **Creative workflows**
- **Scalable quality**
- **Reaching your audience**



# Get in touch.

- **Forums** [forum.unity.com](https://forum.unity.com)
- **Twitter** [@unity3d](https://twitter.com/unity3d) [#unity3d](https://twitter.com/unity3d)
- **Discord** [discord.gg/unity](https://discord.gg/unity)



Please note: The content of this PDF is accurate as of March 2020.



# Thank you.



