



**YOU DON'T NEED THE  
BEVY EDITOR YOU  
THINK YOU NEED**



**BUT THE ONE YOU  
DIDN'T KNOW WAS  
POSSIBLE**

François Mockers

Bevy Game Development Meetup #1 - 2024-01-30

# THOUGHTS ON THE BEVY EDITOR

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## WHO AM I

- ▶ François Mockers, mockersf on GitHub
- ▶ Using (and contributing to) Bevy since the 0.2
- ▶ Maintainer and SME on several topics
- ▶ Come talk to me if you have ideas to improve testing the engine!



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# DISCLAIMER

- ▶ These are my personal thoughts
- ▶ They do not represent:
  - ▶ The direction of the Bevy project
  - ▶ The opinions of the other maintainers
  - ▶ My actions on PRs related to the editor



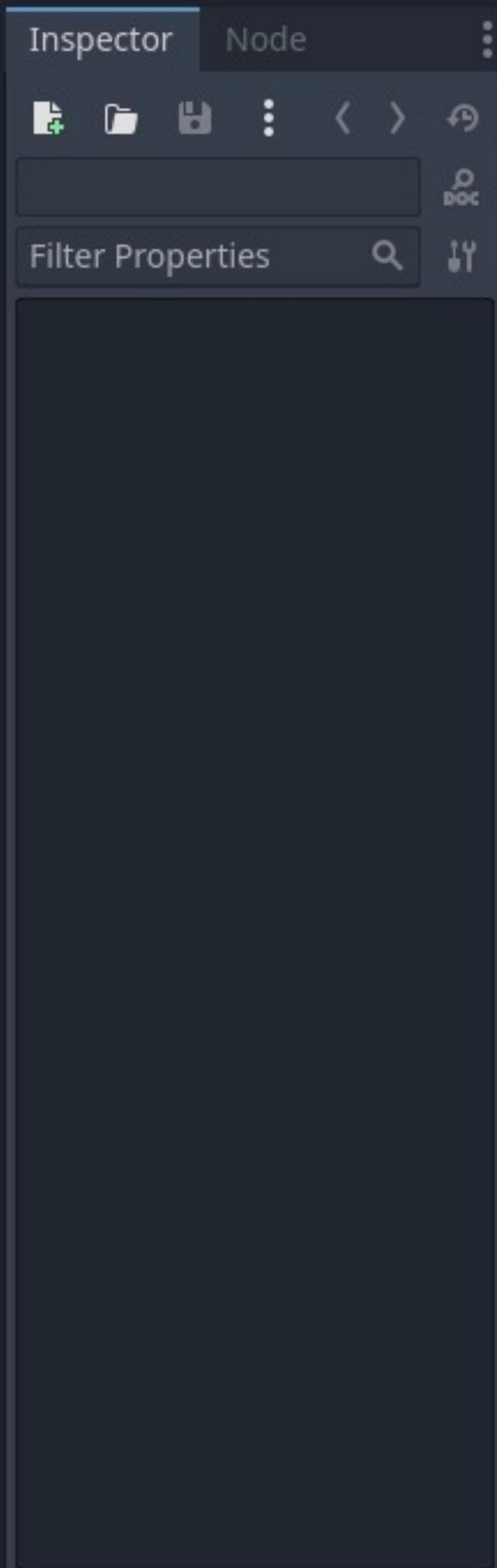
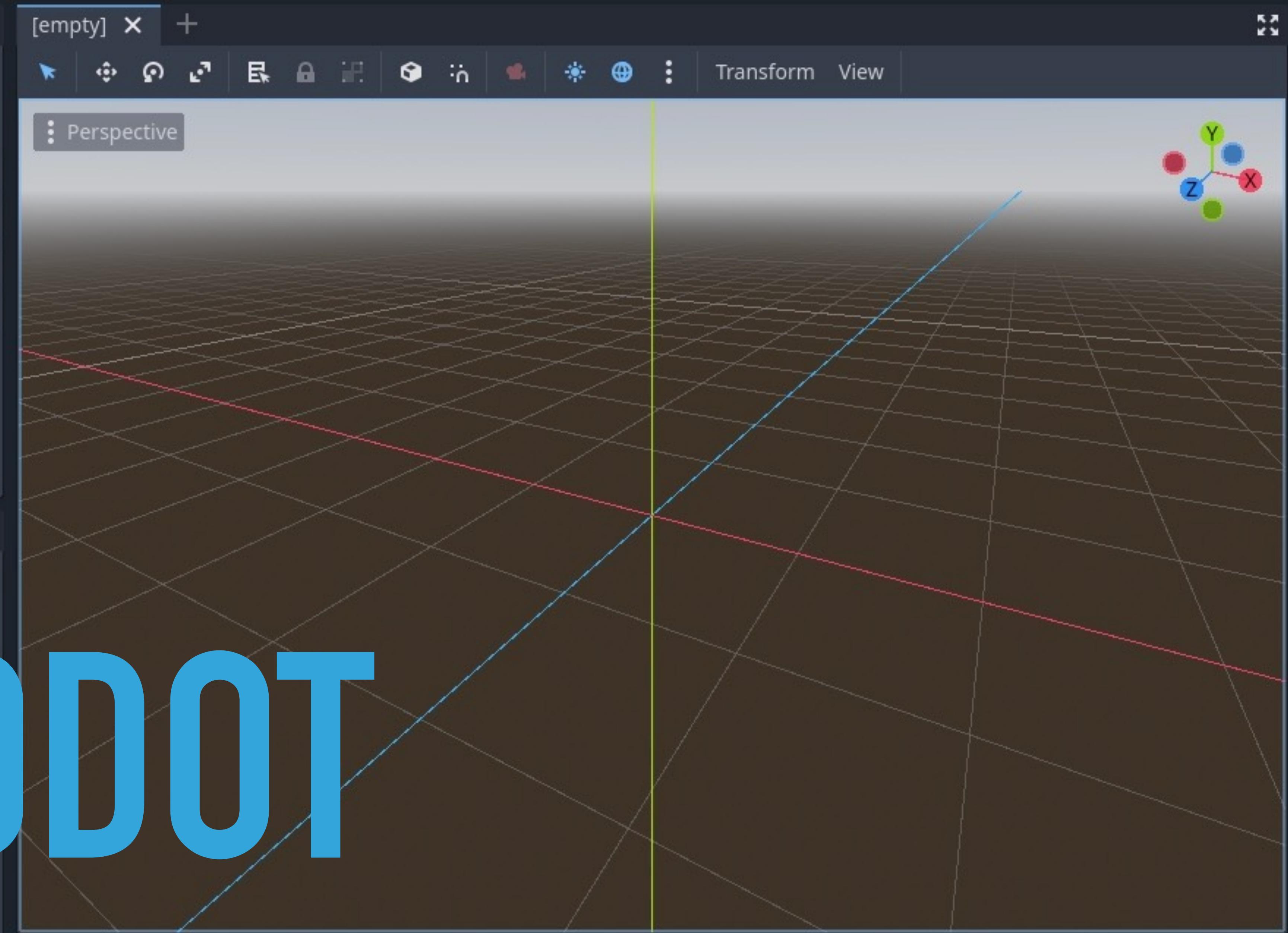
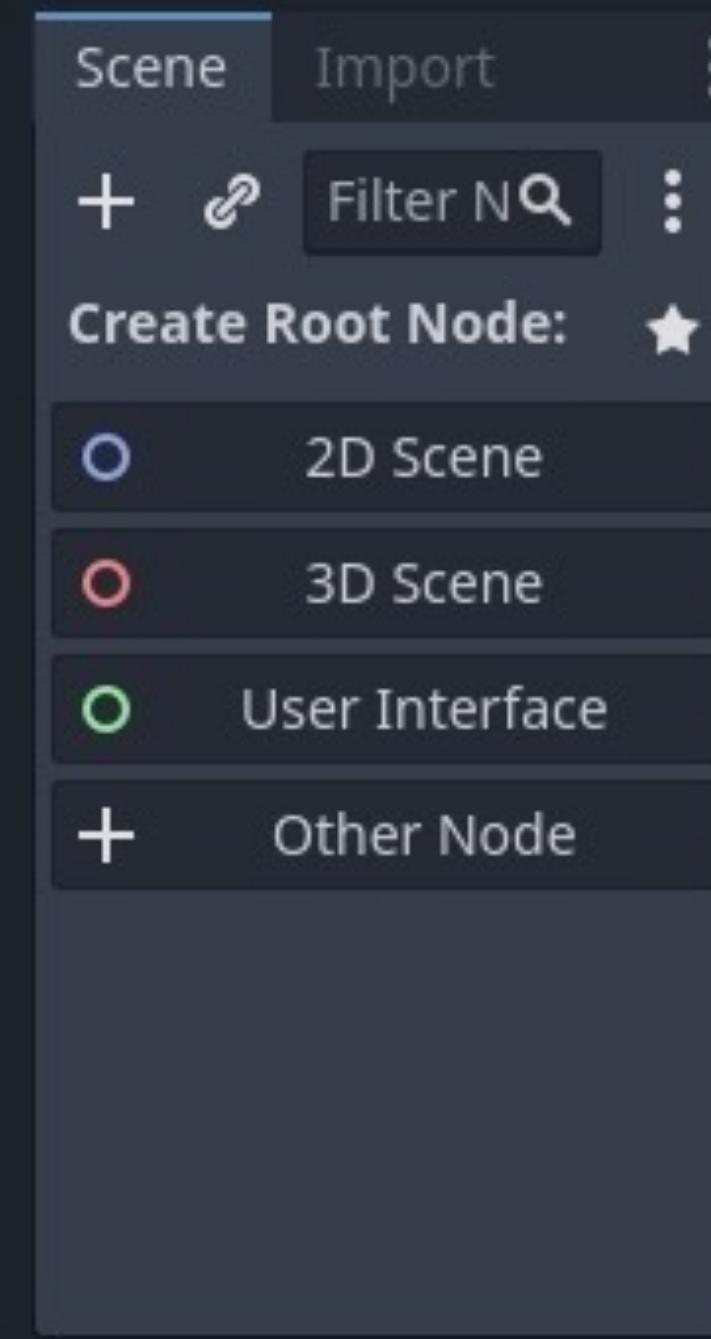
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WHAT'S IN AN EDITOR

Scene Project Debug Editor Help

2D 3D Script AssetLib

▶ II □ ○ ○ ○



File Edit Assets GameObject Component Animation Rigging Jobs Window Help

Center Local

**UNITY**

The Unity Editor interface is shown, featuring the following components:

- Hierarchy Panel:** On the left, it lists the project structure. The "NinjaRig\_Climbing" object is selected, highlighted with a blue border.
- Scene View:** The central area displays a 3D scene with a blue-clad ninja character climbing a vertical surface. A glowing green sword icon is positioned near the character. The scene includes a floor and some vertical structures.
- Inspector Panel:** On the right, it shows the properties of the selected "NinjaRig\_Climbing" object. Key settings include:
  - Transform:** Position X: 10.762, Y: 333.436, Z: 31.591; Rotation X: 0, Y: 90, Z: 0; Scale X: 1, Y: 1, Z: 1.
  - Animator:** Enabled.
  - Rigidbody:** Enabled, with Mass set to 1.
  - Capsule Collider:** Enabled, with Center X: 0, Y: 0.9, Z: 0, Radius: 0.3, Height: 1.8, and Direction Y-Axis.
- Project Panel:** At the bottom left, it shows the project's file structure, including Assets, Scenes, and Plugins.
- Toolbar:** At the bottom, it contains various icons for file operations (New, Open, Save, etc.), selection tools (Select, Transform, Move, Rotate, Scale), and other editor functions.

Edit Window Help

Place Actors

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Empty Actor

Empty Character

Empty Pawn

Point Light

Player Start

Cube

Sphere

Cylinder

Cone

Plane

Box

Sphere

Tri

15 actors (1 selected)  View Options

# UNREAL

Save Current Source Control Modes Content Marketplace Settings Blueprints Cinematics Build Play

Perspective Lit Show

10 10° 0.25 4

All Content StarterContent

Filters Search StarterContent

Architecture Audio Blueprints HDRI Maps

10 items

View Options

World Outliner

Search...

Label Type

- Sky\_Light
- ReflectionCaptureA
- SphereReflection
- Sky and Fog
- Atmospheric Fog
- BP\_Sky\_Sphere Edit BP\_
- StaticMeshes
- Chair
- Chair
- Floor
- Floor
- Statue
- Table
- Volumes
- GlobalPostProcess
- SphereReflectionCa

15 actors (1 selected)  View Options

Details Chair

+ Add Component Blueprint

Search Components

Search Details

Transform

Location	-215	-120	32.0
Rotation	-0.0	0.0	63.0
Scale	1.0	1.0	1.0
Mobility	St	St	M

Static Mesh

Static Mesh SM\_Chair

## COMMON PARTS

- ▶ A scene visualisation
- ▶ A scene hierarchy
- ▶ An inspector
- ▶ A project browser

**WE ALREADY HAVE  
THAT**



## BEVY-INSPECTOR-EGUI

- ▶ A scene visualisation
- ▶ A scene hierarchy
- ▶ An inspector
- ▶ A ~~project browser~~

## WHAT'S MISSING? INSPECTOR TO EDITOR

- ▶ Saving the changes made in the inspector
- ▶ Bevy is often code first, saving would mean editing rust files
- ▶ Need to transition to a scene file first workflow
- ▶ Interactivity in the scene

## WHAT'S MISSING? FAST EDITOR

- ▶ Live reloading a scene
- ▶ With the correct states, existing entities and resources
- ▶ Hot reloading of rust code?
- ▶ Rust code generation?

## WHAT'S MISSING? THE REST

- ▶ Project browser?
- ▶ Code editor?
- ▶ Shader editor?
- ▶ Animation editor?
- ▶ Game view / scene view split?



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BUT THE BEVY  
EDITOR?

## WHAT SHOULDN'T IT DO?

- ▶ Edit rust files?
  - ▶ Use your preferred code editor!
- ▶ Edit 3d scenes?
  - ▶ Use blender!
- ▶ Edit sprites?
  - ▶ Use asesprite!

BUT THE BEVY EDITOR?

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## WHAT'S AN ECS EDITOR

- ▶ Extremely Common Scene editor?
- ▶ Easy and Complex Scene editor?
- ▶ Engine Controlled Scene editor?
- ▶ Extra Cool Scene editor?

BUT THE BEVY EDITOR?

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## WHAT'S AN ECS EDITOR

- ▶ Entities editor
  - ▶ List and browse entities
  - ▶ Run queries
  - ▶ Stats on spawn and despawn
  - ▶ List systems with a query matching an entity

BUT THE BEVY EDITOR?

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## WHAT'S AN ECS EDITOR

- ▶ Components editor
  - ▶ Display and edit values
  - ▶ View archetype fragmentation
  - ▶ Stats on add / remove / change
  - ▶ Change storage

BUT THE BEVY EDITOR?

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## WHAT'S AN ECS EDITOR

- ▶ Systems editor
  - ▶ View dependencies and conflicts
  - ▶ Stats on duration, on system params

BUT THE BEVY EDITOR?

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## WHAT'S AN ECS EDITOR

- ▶ Commands, Events, Resources, States, Tasks
  - ▶ More stats!
  - ▶ Send commands
  - ▶ Send events
  - ▶ Modify resources
  - ▶ Change states
  - ▶ Monitor tasks

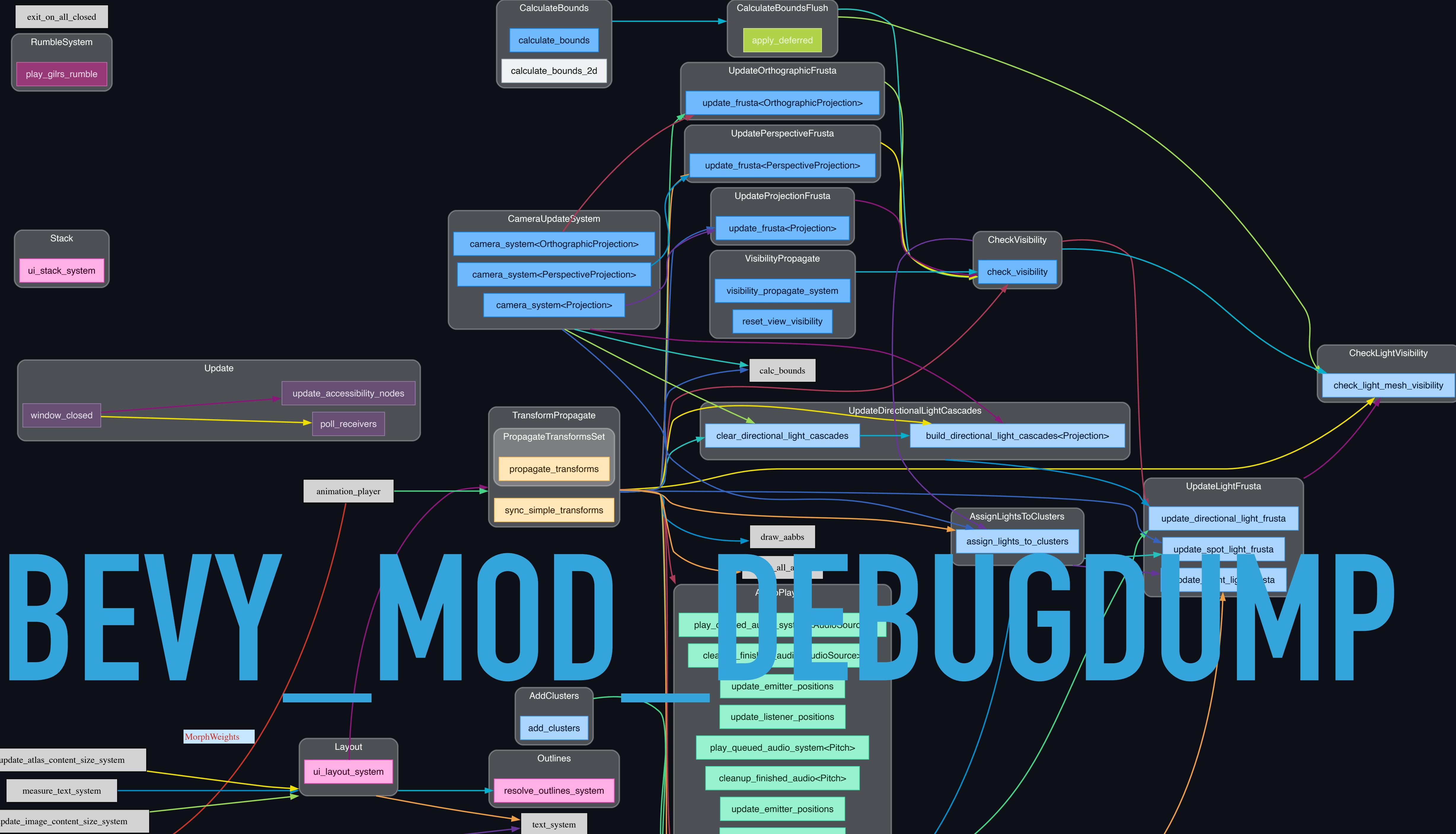
BUT THE BEVY EDITOR?

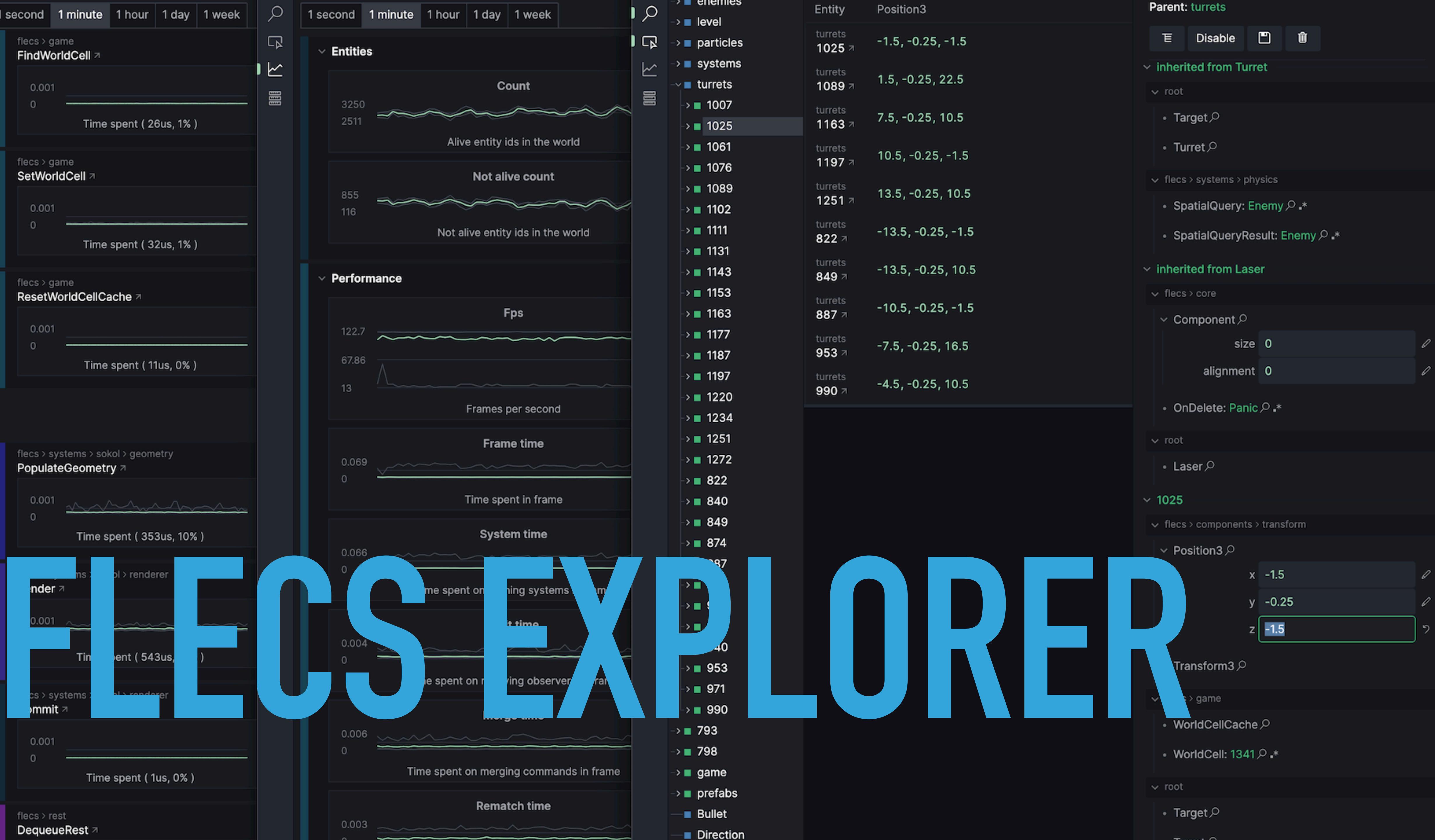
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## WHAT'S AN ECS EDITOR

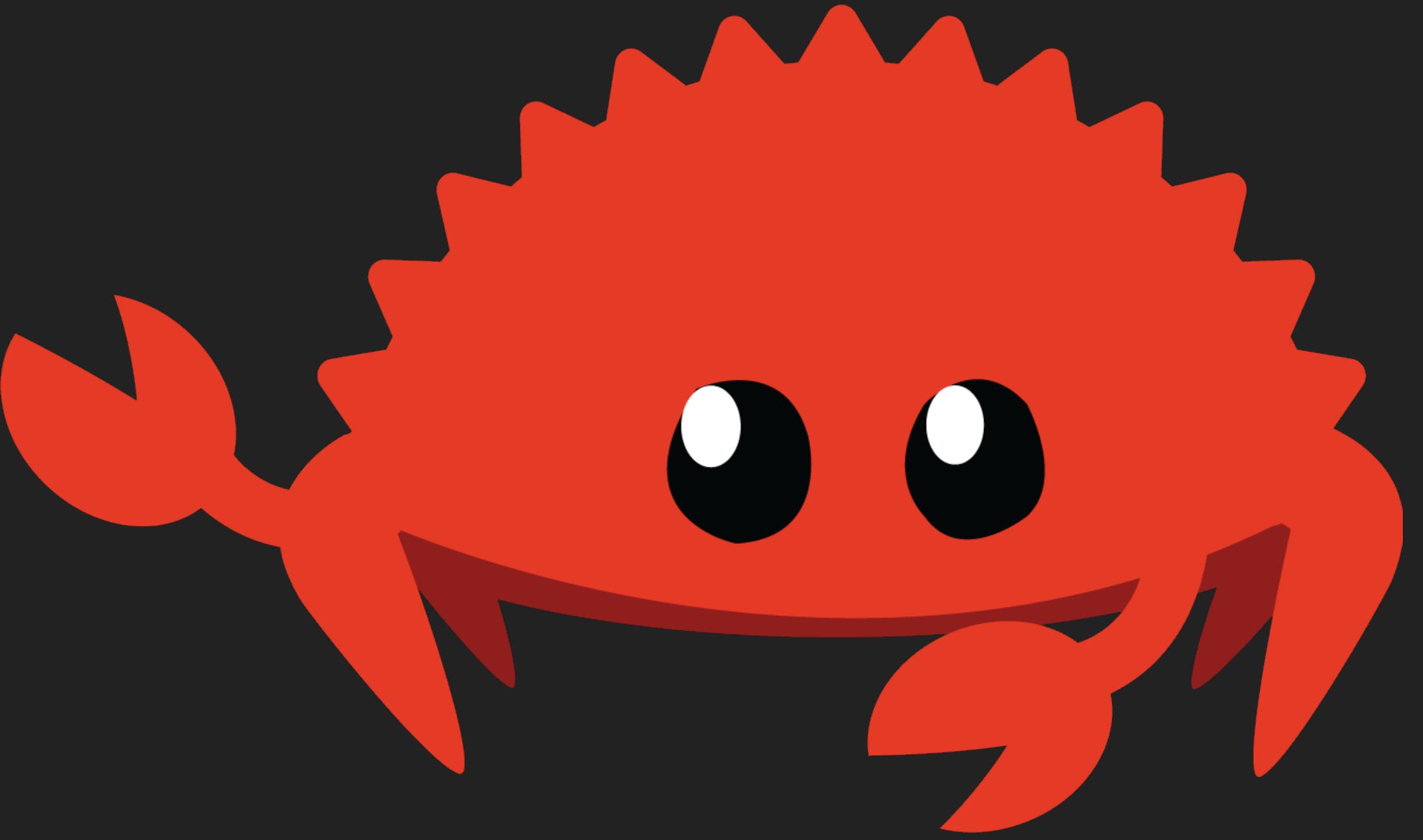
- ▶ Show systems that interacts with audio components (queries and commands)
- ▶ Monitor task spawning and find where buildups could happen
- ▶ Find systems blocking parallelism
- ▶ Reorder commands to limit archetype fragmentation
- ▶ Enable/disable system during runtime

# BEVY MOD DEBUGDUMP





The screenshot shows the Unity Editor interface with the Archetypes tab selected in the top navigation bar. The left panel displays a list of archetypes categorized by scene: All, Default World, Converted Scene: 'TestSubScene', and Converted Scene: 'TestSubScene' (Shadow). Each archetype entry includes its name, ID, Allocated size (in KB), and Unused size (in KB). The 'Default World' section is expanded, showing several archetypes with IDs like c0490c3a4cae66e7 and 637ae4499826a4d4, and sizes ranging from 16 KB to 288 KB. The right panel shows the Inspector for an archetype named 'Archetype 70f9e87ffc5a4352'. The Inspector tab bar includes 'Inspector', 'Inspector' (disabled), and 'Project Settings'. The main content of the Inspector is titled 'Track Shader Reflection Changes System' and contains tabs for 'Queries' (selected) and 'Relationships'. The 'Queries' tab lists various components and their access levels: Read & Write, Read, or Read Only. Components listed include HybridLinkInfo, ChunkworldRenderBounds, LocalToWorld, PhysicsMaterial, RenderBounds, WorldRenderBounds, PhysicsVelocity, BuiltInMaterialProperties, BuiltInMaterialProperties, BuiltInMaterialProperties, Rotation, Translation, Entity, PhysicsCollider, PhysicsDamping, BlendProbeTag, PerInstanceCullingTag, and WorldToLocal\_Tag.



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THERE ARE GREAT  
TOOLS OUT THERE

### SCENE EDITOR

- ▶ Generalist
  - ▶ Blender <https://www.blender.org/>
  - ▶ LDtk <https://ldtk.io/>
- ▶ Specialised
  - ▶ TrenchBroom <https://trenchbroom.github.io/>
  - ▶ World Machine <http://www.world-machine.com/>
- ▶ And many more

# IMAGES

- ▶ Asesprite <https://www.aseprite.org/>
- ▶ Inkscape <https://inkscape.org/>
- ▶ Krita <https://krita.org/>
- ▶ And many more

## 2D ANIMATIONS

- ▶ Rive <https://rive.app/>
- ▶ Spine <https://esotericsoftware.com/>
- ▶ And many more

## STORYTELLING

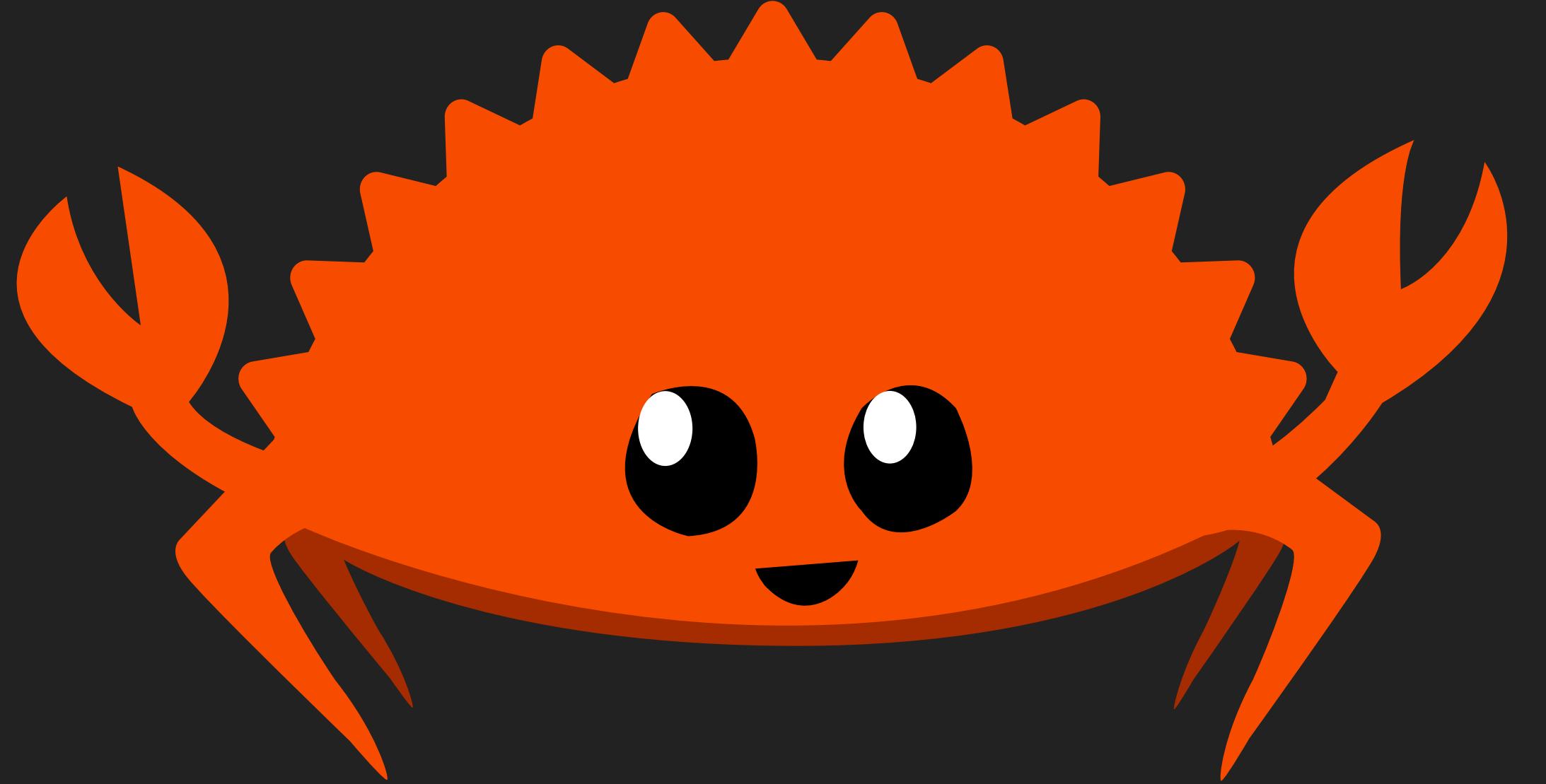
- ▶ Yarn Spinner <https://www.yarnspinner.dev/>
- ▶ And many more

## SOUND EFFECTS

- ▶ Audacity <https://www.audacityteam.org/>
- ▶ ChipTone <https://sfbgames.itch.io/chiptone>
- ▶ jsfxr <https://sfxr.me/>
- ▶ And many more

### CODE EDITOR

- ▶ ...
- ▶ And many more



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# CLOSING THOUGHTS

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## CLOSING THOUGHTS

- ▶ A scene editor doesn't make sense until we have a scene-first workflow
  - ▶ But designing its UI now is fun!
  - ▶ And it's high impact as it's the first thing newcomers will see for Bevy 1.0
- ▶ But it's boring **to me** as it's reproducing what everyone else is doing
- ▶ We could try to explore what makes Bevy unique instead
- ▶ There are also a lot of low hanging fruits around project creation, feature selection, asset management that could be addressed now and bring a lot of value to the project

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## CLOSING THOUGHTS

- ▶ Look at the prototypes
- ▶ [https://github.com/bevyengine/bevy\\_editor\\_prototypes/discussions/1](https://github.com/bevyengine/bevy_editor_prototypes/discussions/1)
- ▶ Create your own!
- ▶ Have fun!
- ▶ Open source burnout is real, don't put pressure on yourself, take care of yourself