The open source game engine Bevy

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About me

- senior consultant at TNG
- using Bevy since 2020
- maintaining several open source plugins
- occasional Bevy contributor

@NiklasEi on GitHub

My first game jam entry using Bevy. Oicana is a mixture of puzzle game and tower defence.

“A refreshingly simple data-driven game engine built in Rust Free and Open Source Forever!”

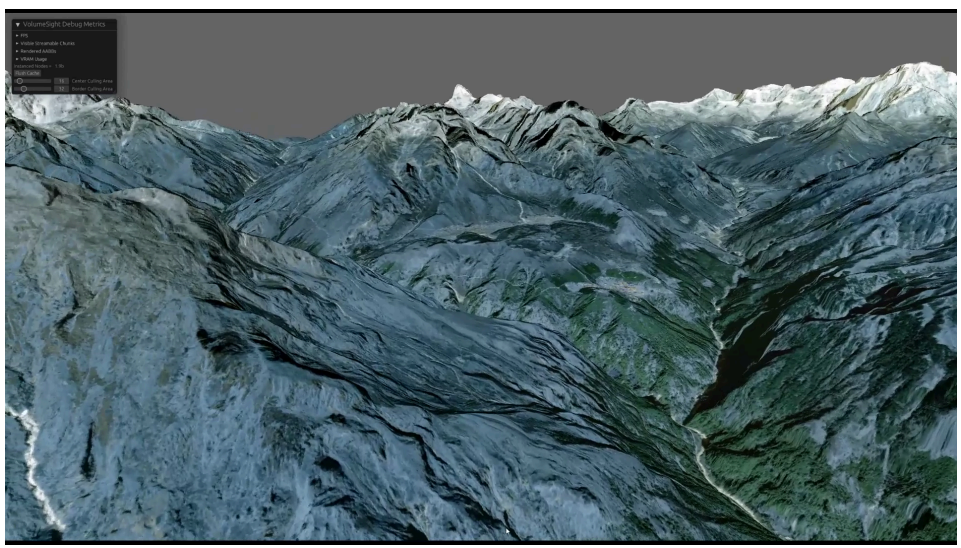
— bevyengine.org

Bevy Intro

- dual-licensed under Apache 2.0 / MIT
- cross-platform: Windows, macOS, Linux, Web, Android, iOS
- rather new; first public version in August 2020

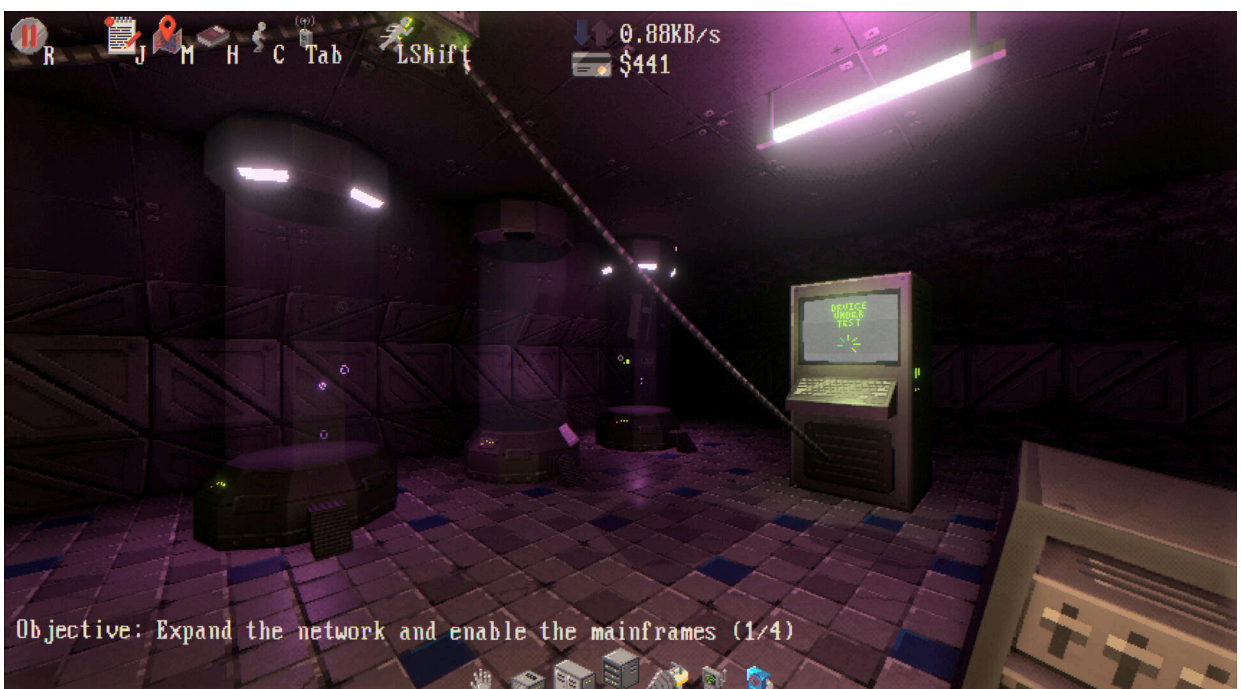
Projects using Bevy

- hundreds of small games on itch.io
- some usage outside of game dev like CAD and other simulations
- a couple of projects in mobile stores and on steam



32km² of Mount Everest in 1m resolution and automatic LOD. Shared by @borgerking from Foresight on the Bevy Discord (thread).

Bevy Games on Steam - Tunnet



Build, debug and optimize a computer network in an underground facility.

Bevy Games soon on Steam - Times of progress

A City Builder set during the Industrial Revolution.

A short organisational history

August 2020

First public version

Version 0.1 is published with a blog post and a community starts to build up.

January 2022

Release of Bevy 0.6 - 9 months after 0.5

From now on: start release process every 3 months

January 2023

Subject Matter Experts (SMEs)

New role to improve bottleneck in reviews

March 2024

Bevy foundation

A non-profit organisation; the board are the maintainers. Move Sponsorship from individual contributors to the foundation.

May 2024

Alice hired by the foundation

Alice, a long-time maintainer, is hired by the foundation to work on Bevy full-time.

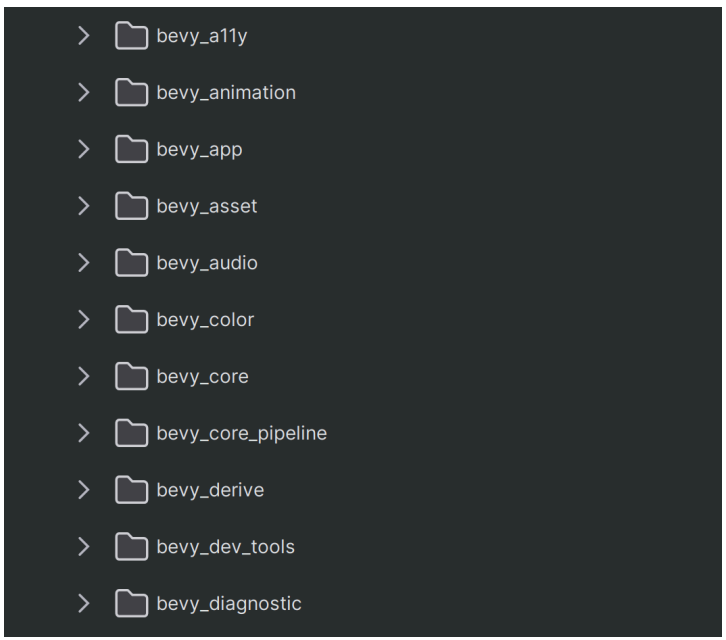
July 2024

Version 0.14.0

The first version with release candiates

What makes Bevy different?

- everything based on Entity Component System (ECS)
- written in Rust
- very modular (40 “internal plugins”)



Some of the internal Plugins that make up Bevy.

Bevy Games soon on Steam - Tiny Glade

Tiny Glade is a small relaxing game about doodling castles.

← A cosy home that I built with the Tiny Glade Demo.

ECS

Separation of data and behaviour

- **Entity**: id (think 1, 2, 3…)
- **Component**: Data (e.g. position, health points, …)
- **Systems**: Behaviour (e.g. “update hp based on position”)

Components get assigned to an entity. Systems can query and mutate components.

It’s time for some code

Where to go from here

- Join the Discord: discord.gg/bevy
- Play around with Bevy examples: github.com/bevyengine/bevy
- Bevy Cheatbook: bevy-cheatbook.github.io

Game jams ☺

0.14 release - blog post

Detailed release notes
for Bevy 0.14

Give Bevy a try!

Find the code and slides at
github.com/NiklasEi/btd24_bevy_talk

Appendix

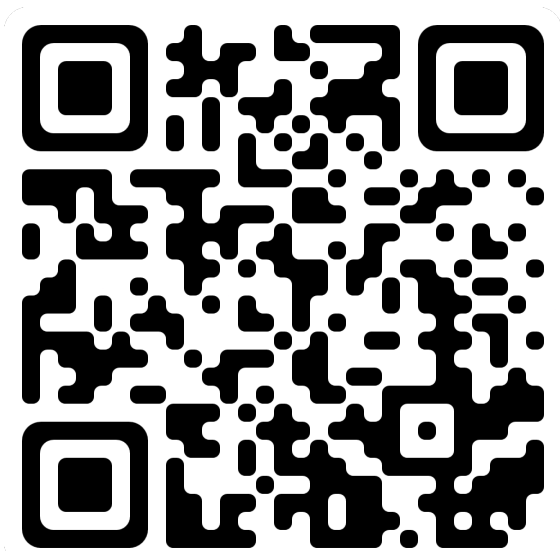
Community overview

- official Discord server: discord.gg/bevy
- development on GitHub: github.com/bevyengine
- resources and assets: bevyengine.org/assets

Why ECS?

- in games, everything wants to access everything else
- imagine what your player class will look like

Watch Catherine West explain it best



"RustConf 2018 - Closing Keynote - Using Rust For Game Development by Catherine West"

Bevy ECS

```rust
fn main() {
  let mut world = World::new();
  world.spawn(Counter { value: 0 });
  let mut schedule = Schedule::default();
  schedule.add_systems(increase_counter);
  schedule.run(&mut world);
}

#[derive(Component)]
struct Counter {
  pub value: i32,
}

fn increase_counter(mut counter: Query<&mut Counter>) {
  counter.single_mut().value += 1;
}
```