

An Overview to Game Development Using Rust

A Toxic Relationship With Rust

Marti

OmniMeet

November 25, 2025

Outline

- 1 What is Bevy?
- 2 Why use Bevy for game development?
- 3 How does Bevy works?
 - ECS Architecture
 - Bevy's Rendering Pipeline
- 4 Building a simple game with Bevy.
- 5 Bevy Basics
- 6 Core Content
- 7 Conclusion

Bevy Game Engine



Bevy is an open-source data-driven game engine built in Rust.

- It emphasizes simplicity, modularity, and performance.
- Bevy uses an Entity-Component-System (ECS) architecture.
- It provides a range of features including 2D/3D rendering, audio, input handling, and more.

Outline

- 1 What is Bevy?
- 2 Why use Bevy for game development?
- 3 How does Bevy works?
 - ECS Architecture
 - Bevy's Rendering Pipeline
- 4 Building a simple game with Bevy.
- 5 Bevy Basics
- 6 Core Content
- 7 Conclusion

Advantages of Bevy

- **Rust Language:** Memory safety without garbage collection, zero-cost abstractions, and fearless concurrency.
- **ECS Architecture:** Promotes clean code organization, scalability, and high performance through data-oriented design.
- **Cross-Platform:** Deploy to Windows, macOS, Linux, Web (WASM), iOS, and Android from a single codebase.
- **Open Source:** MIT/Apache 2.0 licensed, actively maintained by a vibrant community.
- **Code-Driven:** Pure code workflow with no lock-in to proprietary editors (Official editor in development).
- **Modular Design:** Use only what you need - built as a collection of plugins you can mix and match.

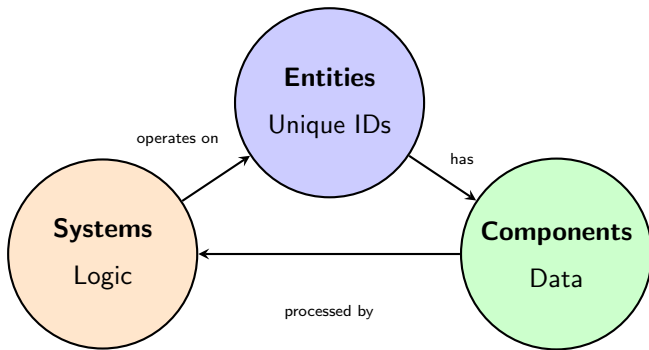
Bevy vs Other Engines

- **Lightweight:** Lightweight compared to larger engines.
- **Flexibility:** More control over low-level systems and architecture.
- **Paradigm:** ECS is still not really popular in general.

Outline

- 1 What is Bevy?
- 2 Why use Bevy for game development?
- 3 How does Bevy works?**
 - ECS Architecture
 - Bevy's Rendering Pipeline
- 4 Building a simple game with Bevy.
- 5 Bevy Basics
- 6 Core Content
- 7 Conclusion

Entity-Component-System (ECS)



Entities

Unique identifiers representing objects in the game world

Components

Data containers that hold attributes of entities

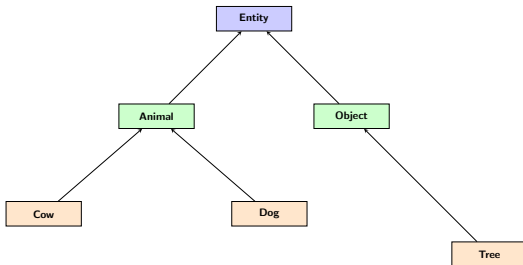
Systems

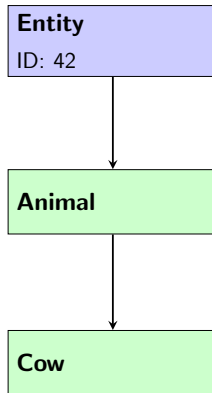
Logic that operates on entities with specific components



Traditional OOP Approach

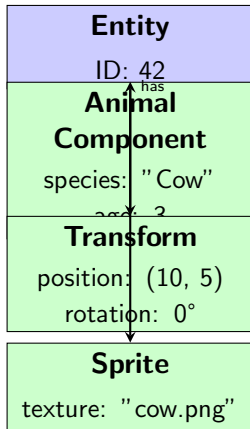
Shitty Inheritance Hierarchy





ECS Architecture

Example: A Cow Entity



A cow entity is composed of multiple components that define its data

Rendering in Bevy

- Bevy uses a modern rendering pipeline based on wgpu.
- Supports both 2D and 3D graphics.
- Provides built-in shaders and materials.

Outline

- 1 What is Bevy?
- 2 Why use Bevy for game development?
- 3 How does Bevy works?
 - ECS Architecture
 - Bevy's Rendering Pipeline
- 4 Building a simple game with Bevy.**
- 5 Bevy Basics
- 6 Core Content
- 7 Conclusion

What is this presentation about?

So lets begin with an overview for what we can expect from this presentation.

- What is Bevy?
- Why use Bevy for game development?
- How does bevy works?
- Building a simple game with Bevy.

Outline

- 1 What is Bevy?
- 2 Why use Bevy for game development?
- 3 How does Bevy works?
 - ECS Architecture
 - Bevy's Rendering Pipeline
- 4 Building a simple game with Bevy.
- 5 Bevy Basics**
- 6 Core Content
- 7 Conclusion

Outline

- 1 What is Bevy?
- 2 Why use Bevy for game development?
- 3 How does Bevy works?
 - ECS Architecture
 - Bevy's Rendering Pipeline
- 4 Building a simple game with Bevy.
- 5 Bevy Basics
- 6 Core Content**
- 7 Conclusion

Two-Column Layout

Left Column

- Perfect for placing text next to an image or a chart.
- This column takes up 50

Right Column Remember to add an image named 'placeholder.png' in your project directory.

Showing Off Some Code

```
fn main() {  
    println!("Hello, Beamer!");  
}
```

Outline

- 1 What is Bevy?
- 2 Why use Bevy for game development?
- 3 How does Bevy works?
 - ECS Architecture
 - Bevy's Rendering Pipeline
- 4 Building a simple game with Bevy.
- 5 Bevy Basics
- 6 Core Content
- 7 Conclusion

Thank You!

Questions?