Rethinking the Engine

Godot - A Powerful Alternative for Modern Studios
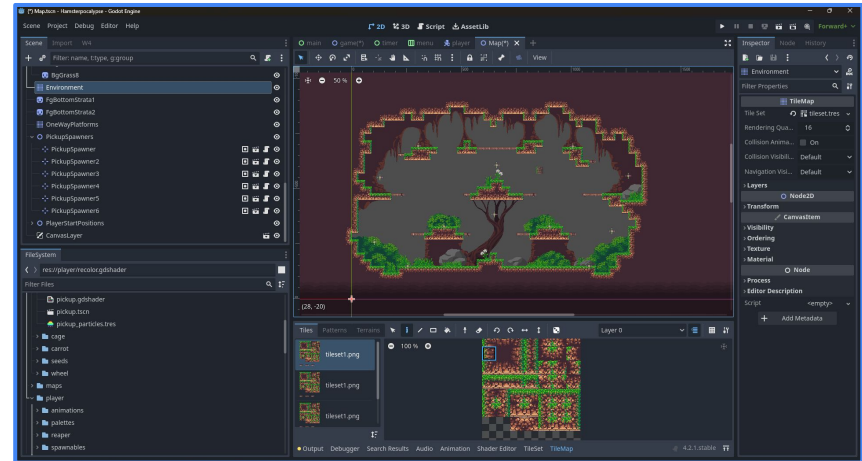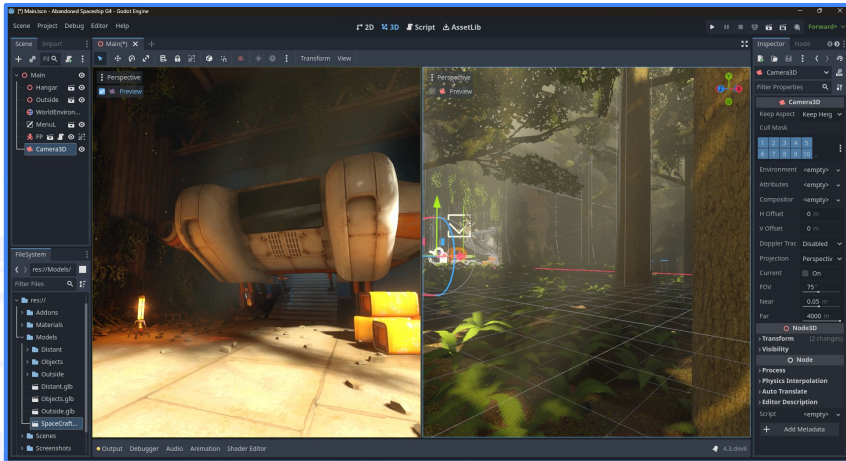
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W4 GAMES

What is Godot?

- The largest and most active **free and open source** game engine
- It belongs to everybody
- Extremely permissive license (**MIT**)

Technical overview (1/4)

- Runs everywhere:
  - Windows, macOS, Linux, Android, iOS, Web browsers, and Consoles*
- Fully fledged editor
  - Including built in script editor, debugger, and performance monitoring tools
- GUI
  - Advanced UI design tools and nodes
- Native 2D experience
  - Sprites, lines, 2D lighting, 2D physics, dedicated 2D tools, etc.
- Native 3D
  - Including tools, rendering, physics, audio, etc.
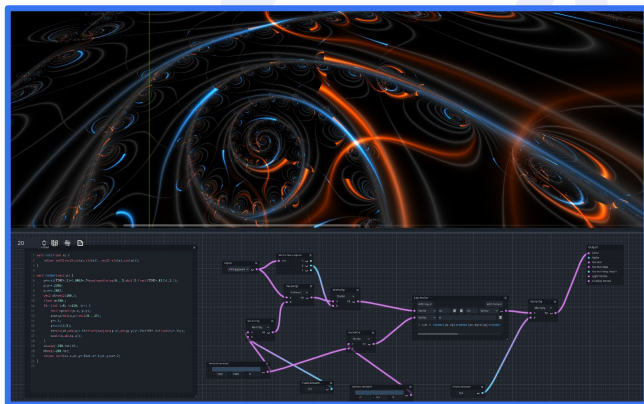
GODOT
Game engine
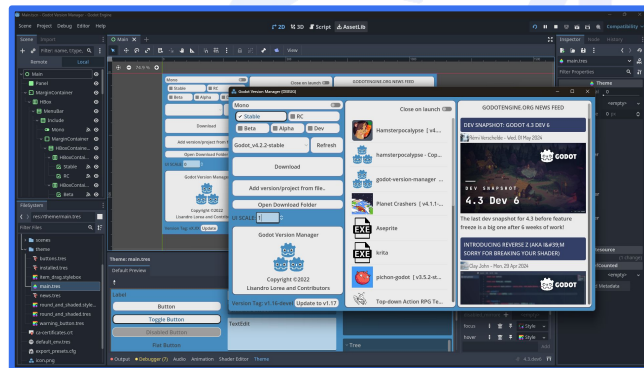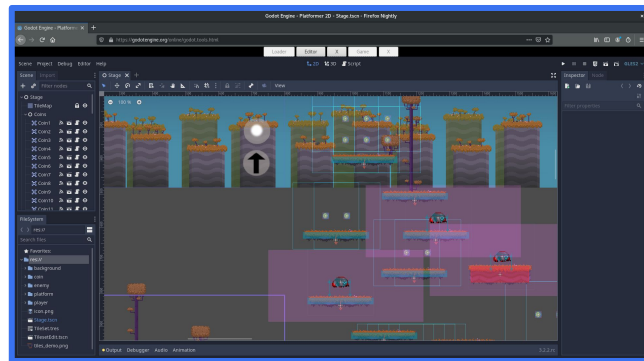
*Via 3rd party

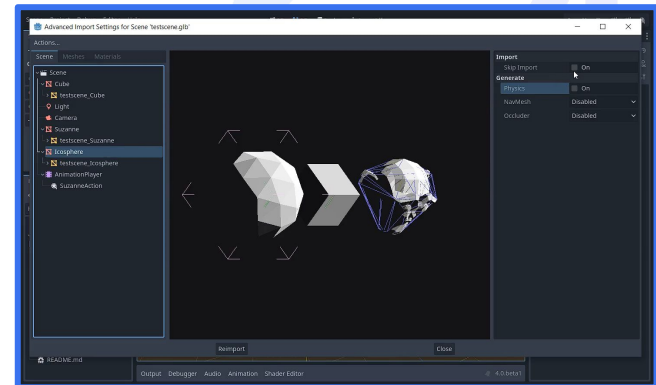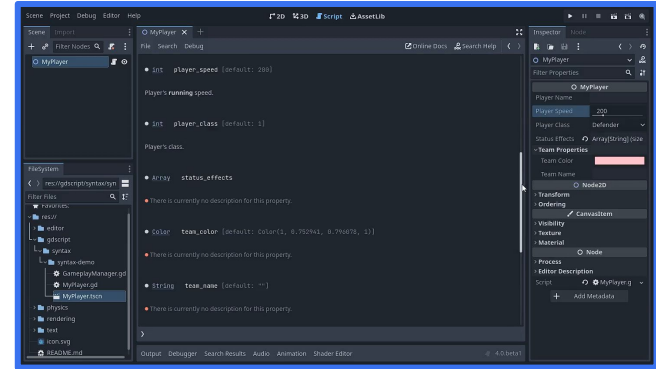# Technical overview (2/4)

- 3D Graphics
  - Full physically-based rendering
  - Real time dynamic GI that scales to low-end devices
  - All modern features: decals, volumetric fog, baked lighting, FSR2, TAA, VRS, SSAO, SSS, etc.
- Custom shaders
  - Integrated shader editor with hot reload
- Particle systems
- XR
  - Full OpenXR support

# Technical overview (3/4)

- Scripting
  - GDScript: tightly coupled custom scripting language
  - C#: using .NET
  - GDExtension: can use C, C++, Rust, D, Swift, etc.
- Audio
  - Mono, Stereo, 5.1, 7.1 output
- Import
  - Drag and drop support for all common formats
    - including audio, images, 3D scenes/models
- Advanced Input mapping

Technical overview (4/4)

- Nav meshes with dynamic obstacle avoidance
- Networking
  - Low-level: TCP, UDP, HTTP
  - High-level: WebSocket, WebRTC, ENet
  - Multiplayer API using any of the high level protocols
- Full Internationalization
- Plugins
- Animation
  - Advanced animation features
  - Can animate any property with custom interpolation
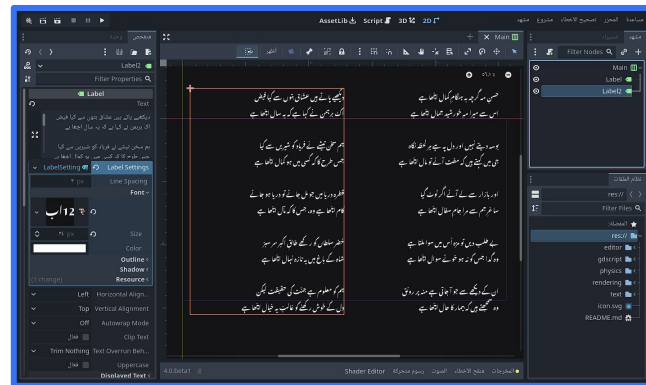
Summing up

- Full-fledged game engine, road tested for 10 years (v4.3 coming soon)
- Feature-rich editor with many QOL tools like animation tree, script editor, UI design tools, visual shaders, tilemaps, physics, XR, multiplayer, etc
- <100mb payload
- Runs on a potato (including Chromebooks)
- Superb 2D support
- 3D support solid and growing
- Fully open-source via MIT license - *IT WILL ALWAYS BE FREE*
- C++ codebase. Prioritizing understandability

Godot users love…

"With Godot, I'm **not bogged down by long project load times and script recompilation times**. I'm **not hampered by random engine / package bugs**. Oh, and **nodes** are great."

"I like how **light weight** it is, and that it **does not require creating an account do download**, the **animation features** are also good."

"It's super **customizable**. And easy to do so! We were able to build a workflow for a content heavy 3D game without much hassle. We also love the **animations features** it has. We use them for gameplay and cutscenes and works great in both scenarios."

"**I don't really see another open-source game engine that is equally ambitious.** All I have to do is sit back and watch it become the linux of interactive 3D."

"**Everything just works**. Whenever I've elected to attempt something new, I consistently find that it's been **elegantly implemented**. It also says a lot that, although C# is my preferred choice professionally, I use **GDScript** for all things Godot because it's so great."

"Game engines always felt intimidating to me, but godot was **delightfully easy to pick up and learn**. especially with such an **active community** sharing all kinds of knowledge and resources!"

"**Tiny footprint, no admin account required to install or Godot account required to use, can run from a flash drive.**"

"That it's **FOSS** is a big plus, of course, but knowing just how much **love and care** is poured into this engine makes me love it infinitely more than any other 💙"

"The **Node system** and **GDScript**. On top of that, and maybe even mainly, the **Animation system**. Being able to coordinate and choreograph *every-single-thing* is really empowering and allows for code to be way cleaner."

"**Iteration speed**. I've never had to wait more than a few seconds for any process in Godot. Compare this to entire working days wasted waiting on progress bars for the same tasks in other game engines. 😄"

"I love how **easy Godot is to use**. Many open source projects have awful UI and UX in comparison to their commercial counterparts. Not Godot, for me **Godot actually exceeds their commercial counterparts in many areas**. "

"**Open source** was a big reason for trying but I stuck around mainly because 4.0 made it so **easy to transfer my C# knowledge**. As someone with almost 10 years in "another engine" I have found Godot to be amazingly easy to adapt to and it provides some **awesome out of the box features**"
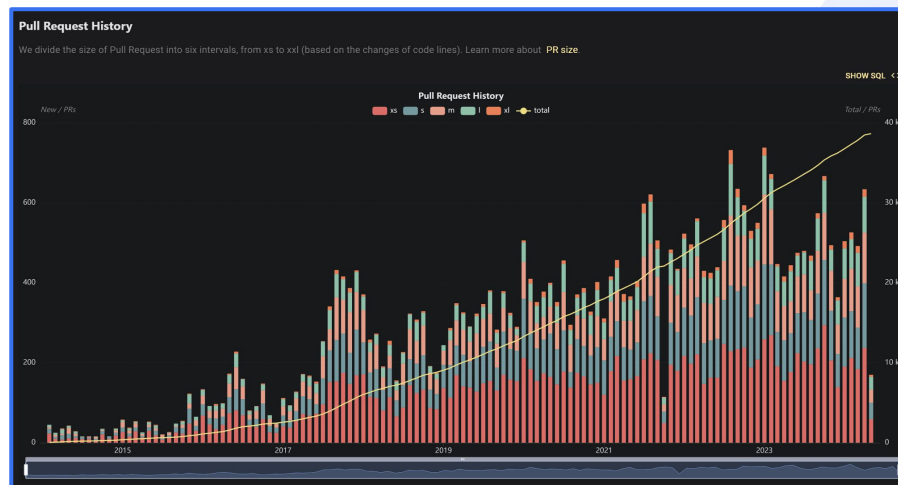
Who makes Godot?

- A large community of contributors
  - \>2000 individuals
  - ~40 core developers, including ~10 working at the Godot Foundation
- One of the largest projects hosted at GitHub
- The largest FOSS project where contributors are, for the most part, individuals (in contrast to companies)
  - W4 Games dedicates a significant amount of resources to contribute to Godot
- Consistently in Top 10 of OSS Rank, among biggest FOSS projects such as Linux, LLVM, Rust or Tensorflow
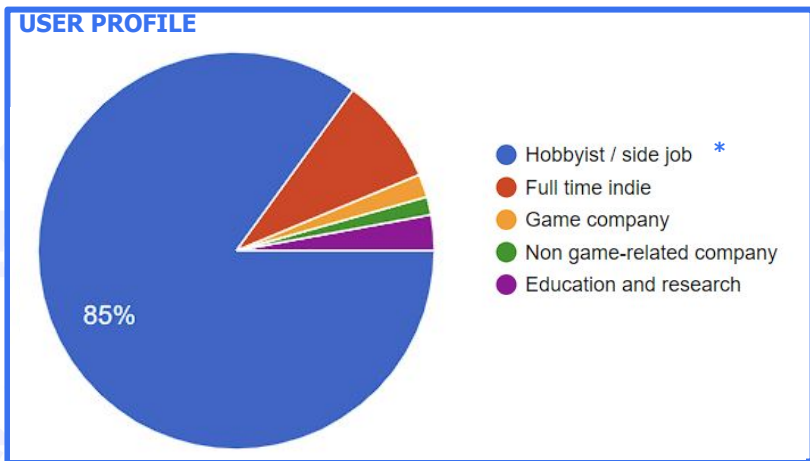

Source: OSSRank

Source: OSS Insight

Who uses Godot?

- **Hobbyists** (Game jams, Itch.io, students)

- **Small to large indie game developers** (see next slide)

- **Large companies** (Google, Meta, Tesla, Visteon, etc.)

USER PROFILE

85%

- Hobbyist / side job *
- Full time indie
- Game company
- Non game-related company
- Education and research

* 10% of the respondents of "Hobbyists / side job",
work at game studios where they don't use Godot, but wish they would.
Source: Godot 2023 community poll (7,671 participants)

Some titles using Godot

GODOT
Game engine

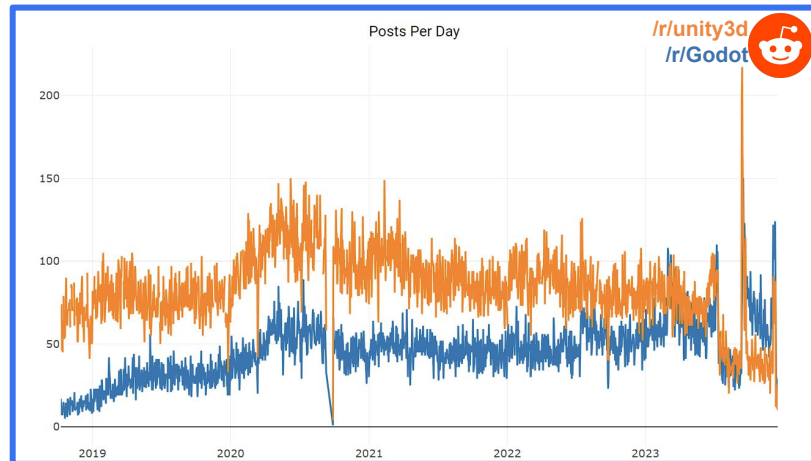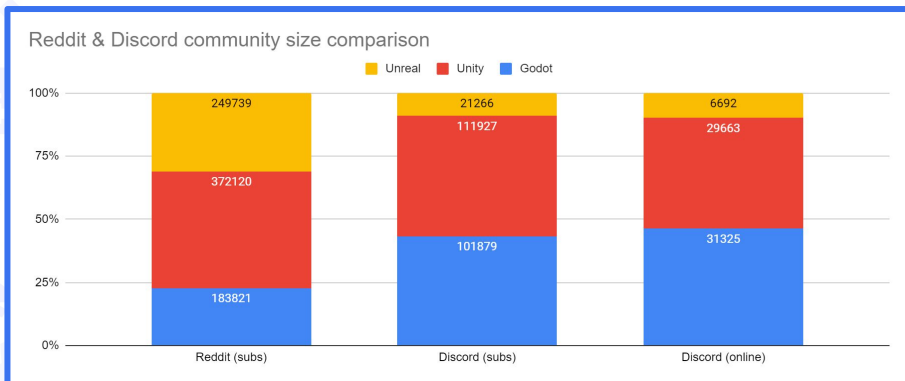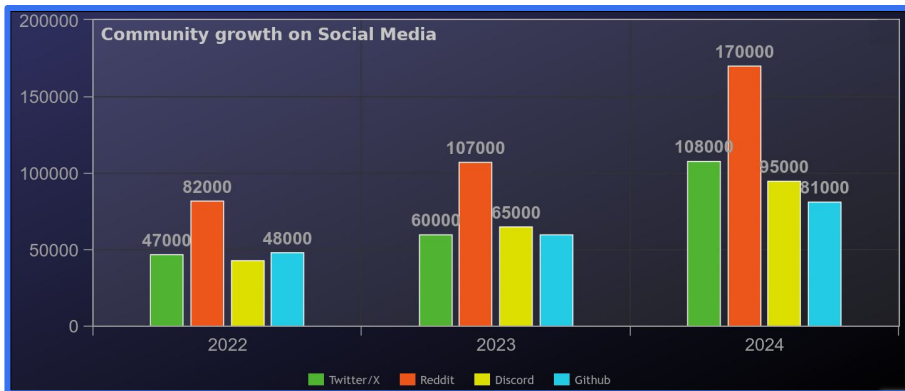|		
BACKPACK BATTLES	HALLS of TORMENT	ROAD TO VOSTOK
CASSETTE BEASTS	BROTATO	DOME KEEPER
SONIC COLORS ULTIMATE	Super secret stuff from a large studio… trust me	Slay the SPIRE II

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How is Godot growing?

- Godot has no telemetry
- We can gauge user base by
  - Community size
  - Game jam usage
  - Number of games published
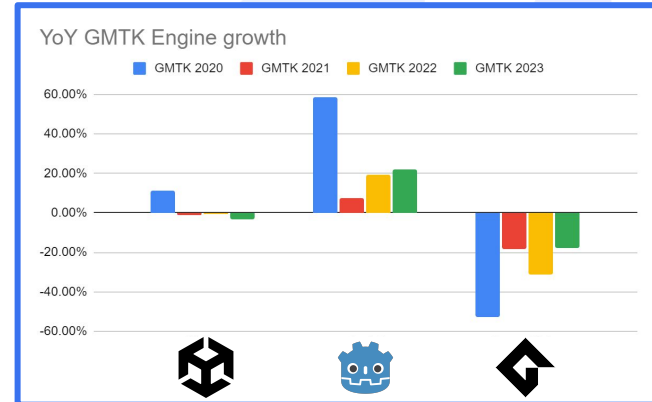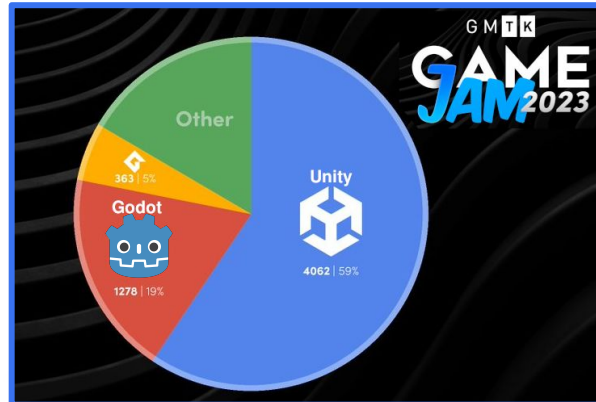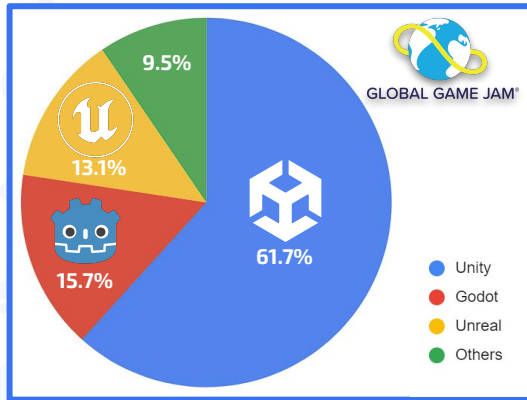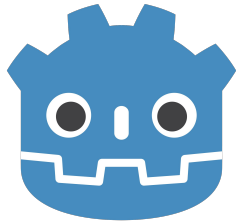 - Website visits / Steam downloads

Community size

Community growth on Social Media

Year	Twitter/X	Reddit	Discord	Github
2022	47000	82000	—	48000
2023	60000	107000	65000	—
2024	108000	170000	95000	81000

Reddit & Discord community size comparison

	Unreal	Unity	Godot
Reddit (subs)	249739	372120	183821
Discord (subs)	21266	111927	101879
Discord (online)	6692	29663	31325

Posts Per Day

/r/unity3d
/r/Godot

Subscribers

Game Jams

- **GMTK Game Jam**
  - Only engine with consistent growth, ~20% YoY
  - 19% games made with Godot
  - GMTK 2023 was ~10 months ago
- **Global Game Jam**
  - Engine with largest growth, >100% in 2024
  - >15% games made with Godot
  - GGJ 2024 was in January 2024
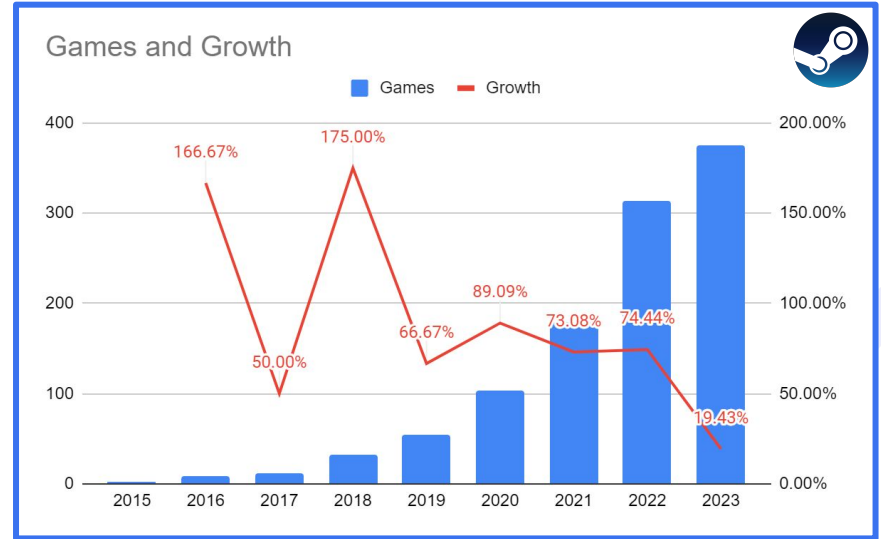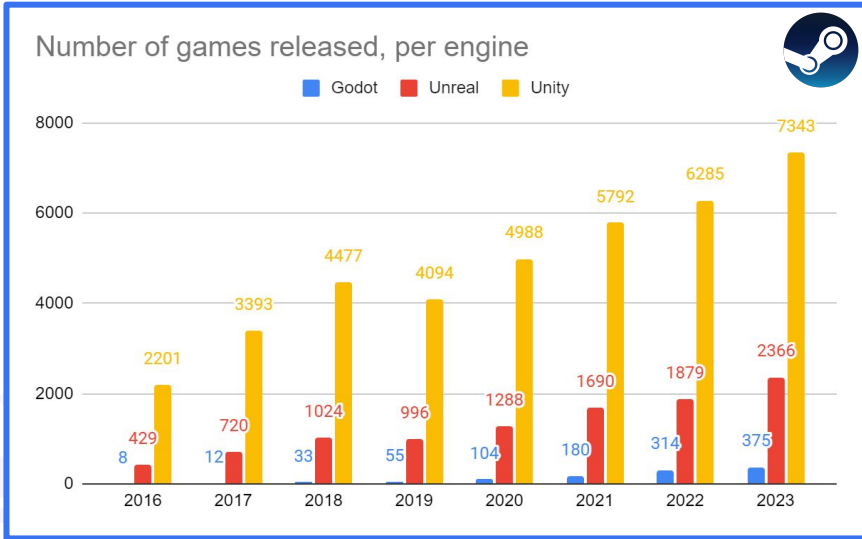 - No official numbers, scraped data
  - Excluding "Unknown tech"

YoY GGJ Engine growth

Legend: GGJ 2019, GGJ 2020, GGJ 2021, GGJ 2022, GGJ 2023, GGJ 2024

Other tech

GLOBAL GAME JAM®

- Unity 61.7%
- Godot 15.7%
- Unreal 13.1%
- Others 9.5%

GMTK GAME JAM 2023

Other 363 | 5%
Godot 1278 | 19%
Unity 4062 | 59%

YoY GMTK Engine growth

Legend: GMTK 2020, GMTK 2021, GMTK 2022, GMTK 2023

Web visits / User base

Unique web visits ~750k / month

~594k lifetime unique users

~4,000 Steam DAU
(~9% of user base) = ~45k DAU

Published games

GODOT
Game engine

Number of games released, per engine

Legend: Godot | Unreal | Unity

Year	Godot	Unreal	Unity
2016	8	429	2201
2017	12	720	3393
2018	33	1024	4477
2019	55	996	4094
2020	104	1288	4988
2021	180	1690	5792
2022	314	1879	6285
2023	375	2366	7343

Games and Growth

Legend: Games | Growth

Year	Growth
2016	166.67%
2017	50.00%
2018	175.00%
2019	66.67%
2020	89.09%
2021	73.08%
2022	74.44%
2023	19.43%

Godot: 238 last week
Unity: 156 last week
Construct: 90 last week
GameMaker: 59 last week
Unreal: 33 last week

Itch.io: Largest in published games WoW

Steam: >65% published games growth YoY except 2023

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Published games

Number of games released, per engine

Game releases YoY growth, per engine
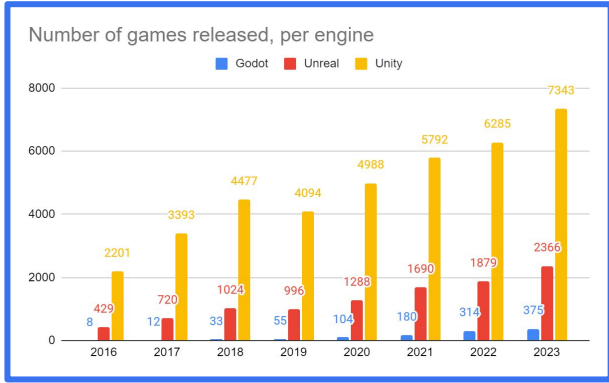
- Acceleration lowered in 2023
- Now on par with other engines

Theories

- Steam engine detection rate lags *significantly* behind releases
- In some niches, early adopters ramping down, transitioning to early majority
- Game dev lifecycle means ramp up in ~2 years:
  - '21-'22 had lower growth rate for Godot (see Game Jams)
  - Godot 4.0 released ~1yr ago - many devs waited for it
  - User influx ~6 months ago

https://www.flickr.com/photos/jurgenappelo/5201275209/

Why you should care about Open Source

- Game engine options
  - Buy
  - Make your own
  - Use Open Source
- Risks of abdicating tech control
  - Pricing model change
  - Discontinued products
  - Focus & priority conflicts
- Make your own
  - Expensive & slow
- Open Source
  - Best of both worlds, but some cons
  - Lack of enterprise services / support
  - Missing toolsets
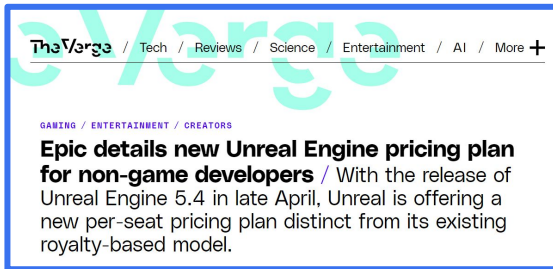
There were other problems with lack of ownership. Toys For Bob had been relying on Criterion's Renderware middleware when it was working on a contract basis for Activision, but after EA acquired Criterion (including Renderware), Activision refused to include its rival in the development pipeline and insisted on the company dump it. A similar thing happened when Microsoft acquired physics engine middleware Havok.

Source: GamesIndustry.biz
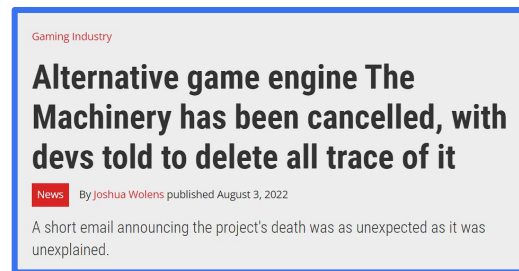
GamesBeat

Jobs · ssues | Metaverse ⌄ | Gaming Hardware ⌄ | Gaming Business ⌄

Unity adds fee for installs for successful small devs, triggering a backlash

A year after Unity raised prices for enterprise and professional versions of its game engine, Unity added a new charge for smaller developers who meet thresholds for revenue and installs.

Starting on January 1, 2024, Unity will charge a Unity Runtime Fee for any game that surpasses a revenue and lifetime install in the preceding 12 months. Normally, Unity Personal usage is free, and subscribers for Unity Pro pay $399 per seat.
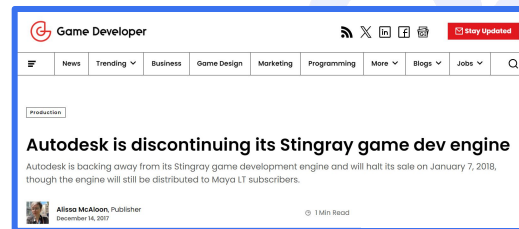
Source: GamesBeat

The Verge

Tech | Reviews | Science | Entertainment | AI | More +

GAMING / ENTERTAINMENT / CREATORS

Epic details new Unreal Engine pricing plan for non-game developers / With the release of Unreal Engine 5.4 in late April, Unreal is offering a new per-seat pricing plan distinct from its existing royalty-based model.

Source: The Verge

Gaming Industry

Alternative game engine The Machinery has been cancelled, with devs told to delete all trace of it

News By Joshua Wolens published August 3, 2022

A short email announcing the project's death was as unexpected as it was unexplained.

Source: PCGamer

Game Developer

News | Trending ⌄ | Business | Game Design | Marketing | Programming | More ⌄ | Blogs ⌄ | Jobs ⌄

Production

Autodesk is discontinuing its Stingray game dev engine

Autodesk is backing away from its Stingray game development engine and will halt its sale on January 7, 2018, though the engine will still be distributed to Maya LT subscribers.

Alissa McAloon, Publisher
December 14, 2017   1 Min Read

Source: Game Developer

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Bridging the gap

Godot feedback from large studios

- Pros
  - Flexibility
  - Empowers technical teams
  - Easy to deploy patches
- Needed
  - 3rd party SDKs integration
  - Telemetry tools
  - Continuous Integration
  - Unit testing
  - C# performance improvements
  - Better physics

Open Source issues

  - Lack of enterprise services / support
  - Missing toolsets (esp. for large studios)

W4
GAMES

The Godot Ecosystem

- Manages the Godot Engine
- **Not-for-profit** entity in The Netherlands
- First and foremost a **community project**
- Receives donations to **help fund Godot Engine development**
- Pure FOSS entity
- Does not do any commercial development
- No profit-driven commercial partnerships

- Created by the Godot Engine leadership
  - Including the technical lead and the project maintainer
- Specializes in commercial products and services related to Godot Engine
- Works with several large companies as clients
  - For joint ventures
  - For profit-driven projects

FOSS Ecosystem
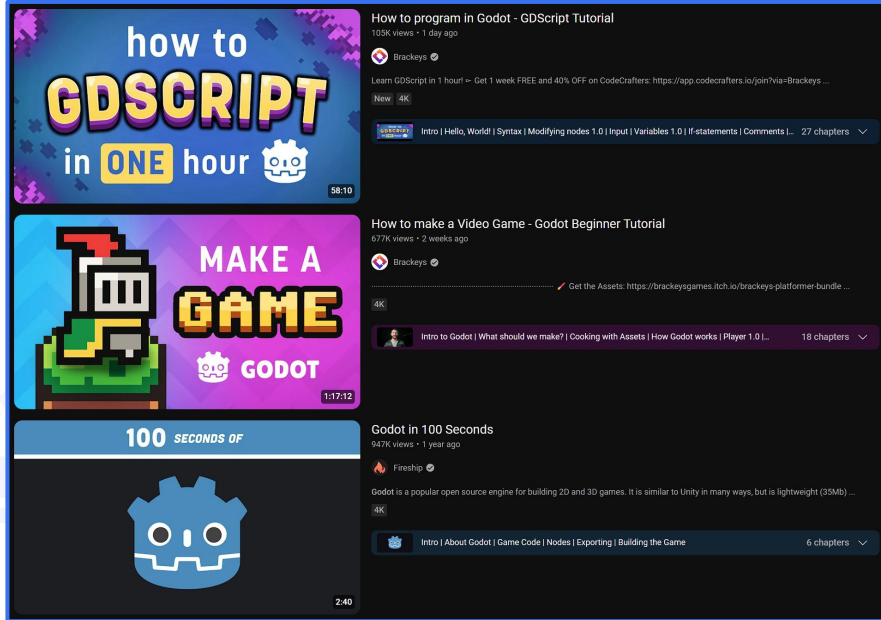
Enterprise Ecosystem

Funding

Individuals

Developers / code

Companies

Ecosystem companies

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GDQuest

V-Sekai

RAMATAK

THE MIRROR

Events / others

Grants

Inspiration

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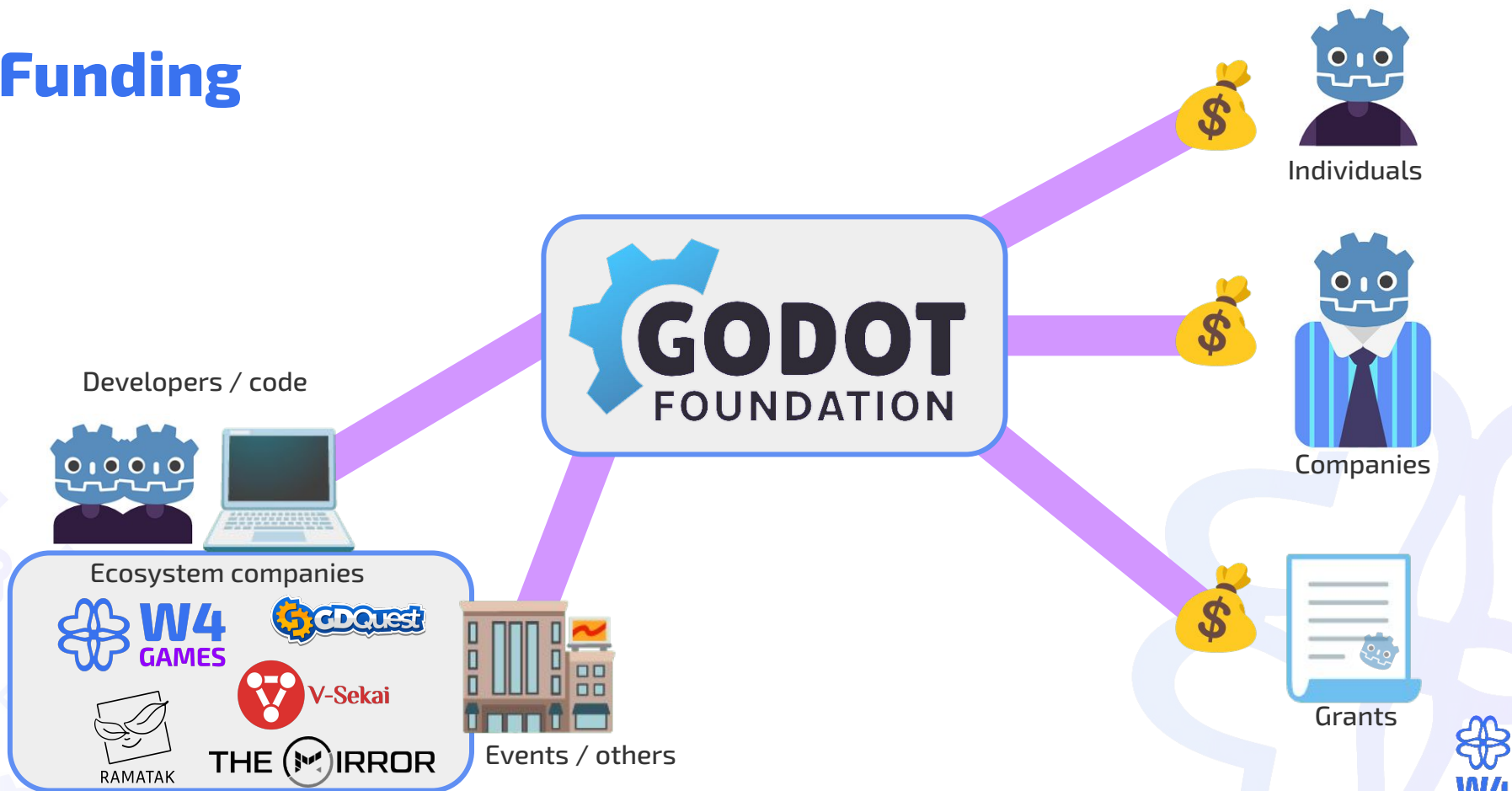
Future trends - Education

Future trends - Adoption

In the last 12 months, have you or your company considered switching your game engine of choice?

Yes, we've already switched **7%**

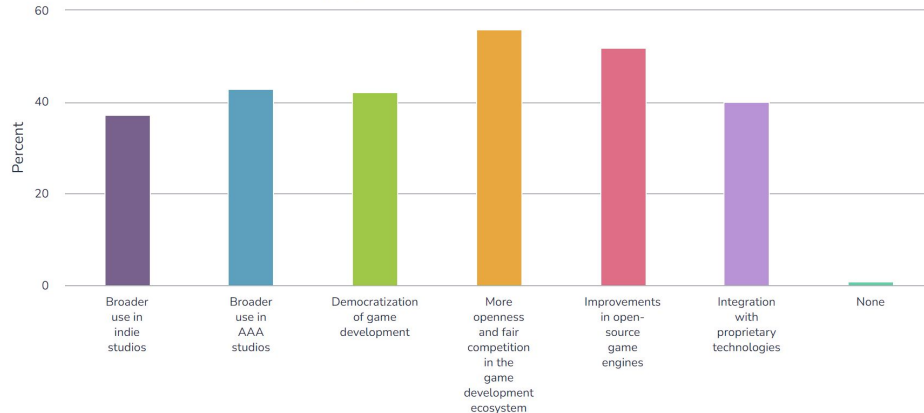Yes, we've considered switching **28%**

No **49%**

Don't know / N/A **16%**

GDC 2024 State of the Game Industry

18. How do you see the role of open-source software evolving in the game development industry over the next few years? Please select all that apply.
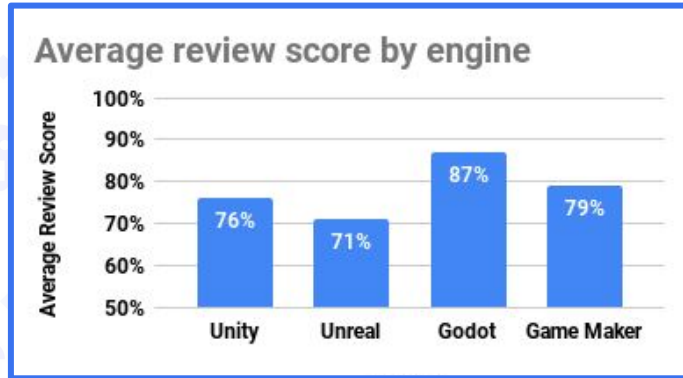

Propeller Insights, 2024

When asked to explain their reasons for possibly switching game engines, many developers cited Unity's policies as their main motivator. According to an analysis of open responses conducted by our partners at Omdia, 51% said they were interested in switching specifically to Godot, either from Unity or Unreal Engine.

"We've thought about switching to Godot—or making our own—to not have to worry about shady business practices or the whims of shareholders."
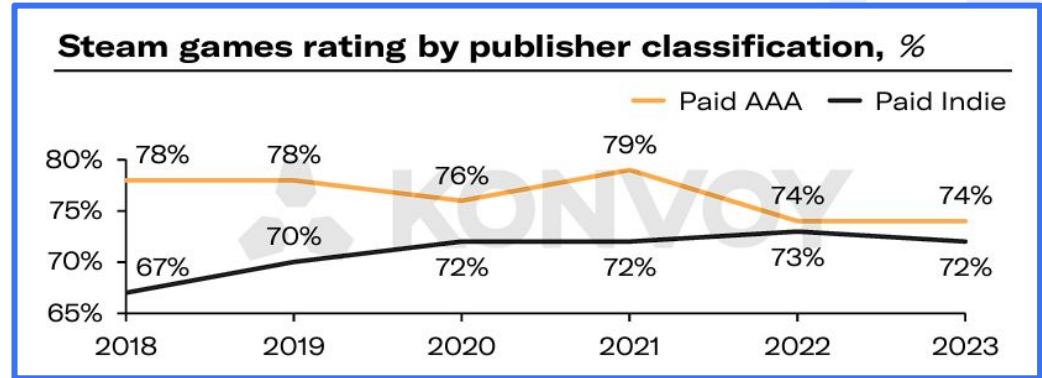
Future trends - Competitiveness

"You're really **fighting for time**. I don't care if you're a one-person, self-published studio or someone that has 1,000 people making a live service multigenerational game, you're still competing for that player's time."

– **Nigel Lowrie** (Devolver co-founder)

Source: GamesIndustry.biz

Average review score by engine

Source: Gamalytic

Steam games rating by publisher classification, %

— Paid AAA — Paid Indie

Source: Konvoy

Thank you!

https://fund.godotengine.org/

Download this deck here!

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