perforce

REPORT

2025 State of Game Technology Report

With Insights from

JETBRAINS

Contents

Brent Schiestl,
Senior Director of Product Management

Introduction

Welcome to the 2025 State of Game Technology Report

Game technology continues to break barriers and redefine what is possible—not just for games, but across industries worldwide. Since our 2024 report, we've witnessed a remarkable evolution that this year's findings bring into focus.

From immersive character design to AI-powered workflows, game technology has become the catalyst driving innovation far beyond traditional gaming applications. The 2025 State of Game Technology Report captures this pivotal moment as these tools reshape how industries create, collaborate, and innovate.

Here are three key insights from this year's report that resonated with me:

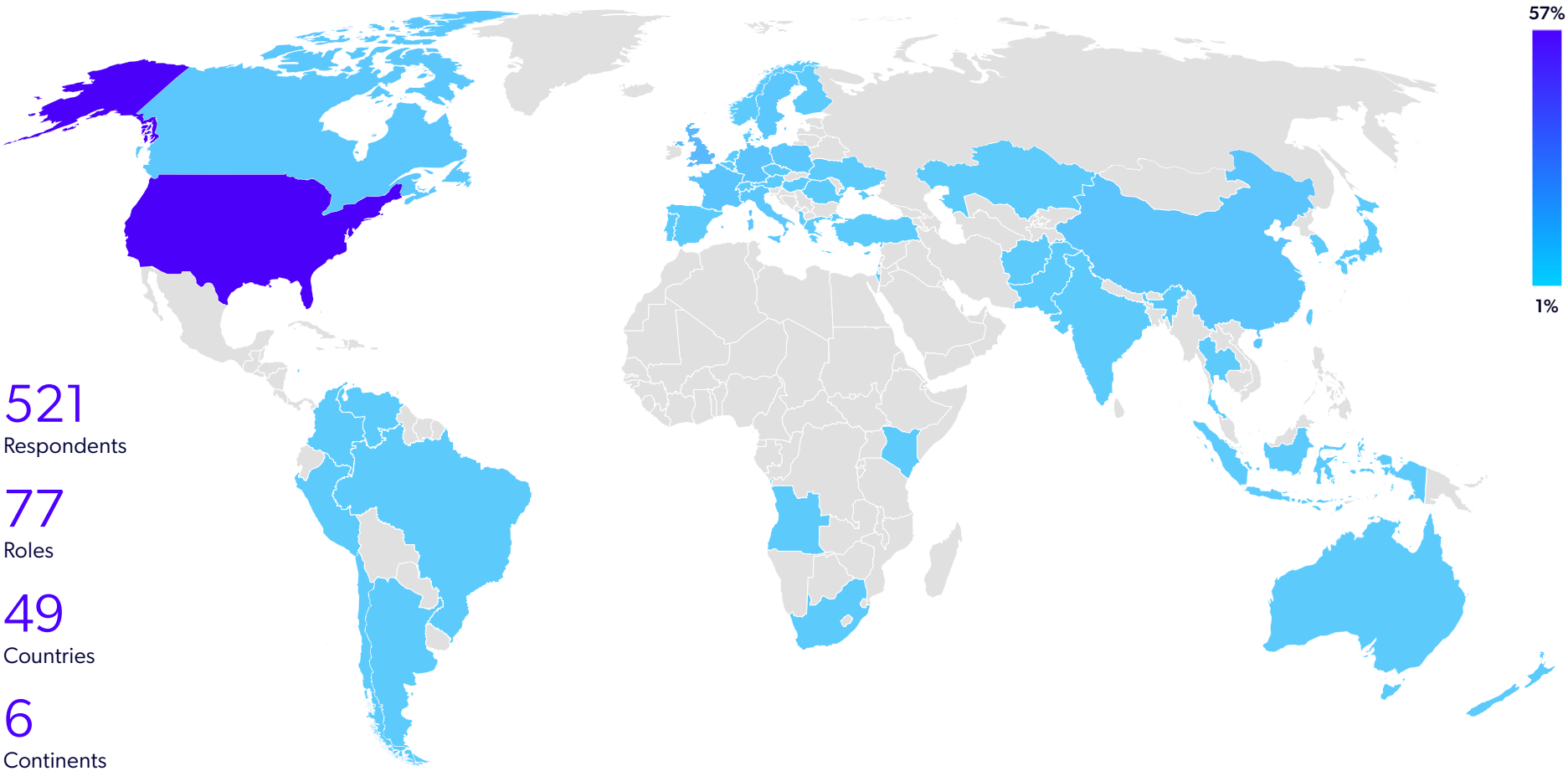
1. **Game Engines: Redefining Toolkits Across Industries:** Game engines have shattered industry boundaries, becoming essential to technology toolkits everywhere. The data is striking—18% of respondents now use game engines for VR/AR (up from just 4% last year), 14% for visualization and simulation, 14% for 3D art creation, and 12% for film and television.
2. **Generative AI: From Experimentation to Business Essential:** The generative AI revolution has moved from "experimental" to "business essential" in less than a year. While debates about ethics continue, 70% of respondents now integrate these tools into their workflows (up from 65% last year).
3. **Media & Entertainment: Leading the AI Transformation Playbook:** Media & Entertainment isn't just adopting AI—it's writing the playbook for how creative industries evolve. An impressive 86% of M&E respondents now leverage generative AI across content creation (44%), imaging and prototyping (35%), and code generation (33%). This sector isn't following trends—it's creating them, showing how AI can transform creative processes while maintaining the human touch that drives exceptional results.

On behalf of our entire team at Perforce, thank you to everyone who contributed to this year's survey. We're excited to see how you'll use these findings to push boundaries and redefine what's possible in your field.

Brent Schiestl
Senior Director of Product Management
Perforce Software

Who We Surveyed

This year, we surveyed 521 leaders and creators across a wide range of industries.



521
Respondents

77
Roles

49
Countries

6
Continents

What Best Describes Your Current Role?


36%
Developer


11%
Visual Artist or Animator


9%
Studio Owner or Studio Lead


6%
Producer or Director


6%
Technical Lead


5%
Project or Program Manager

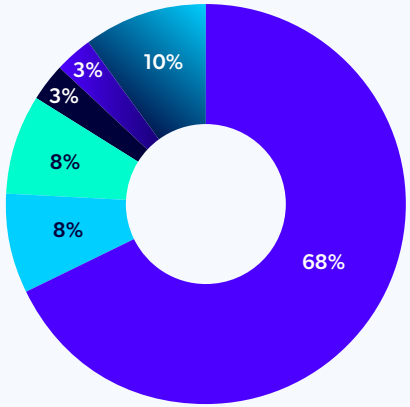

5%
Engineer or QA Tester


2%
Product Designer


20%
Other

Music Composer
Chief Technical Officer
Audio Lead
Architect
Data Analyst

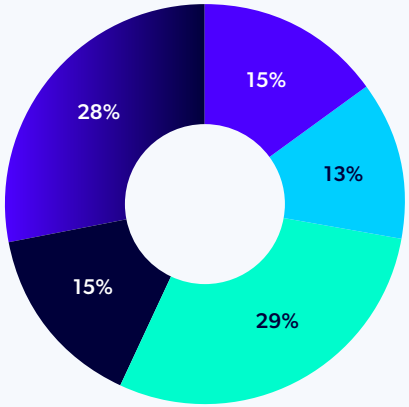
What Best Describes the Industry or Field You Work In?



- Game Development
- Media & Entertainment
- Education
- Architecture, Engineering, or Construction
- Automotive & Manufacturing
- Other

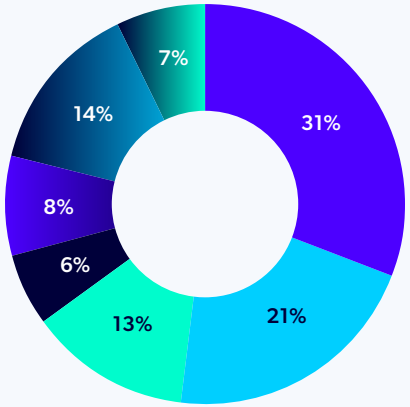
Government
Software
Cybersecurity
Music

How Long Have You Been Working in Your Industry or Field?



- Less than 1 year
- 1-2 years
- 3-5 years
- 6-10 years
- More than 10 years

About How Many People Work at Your Company?



- 1-5 – 31%
- 6-24 - 21%
- 25-99 – 13%
- 100-249 – 6%
- 250-999 – 8%
- 1000+ – 14%
- I don't know

The Industry-Wide Impact of Game Engine Technology

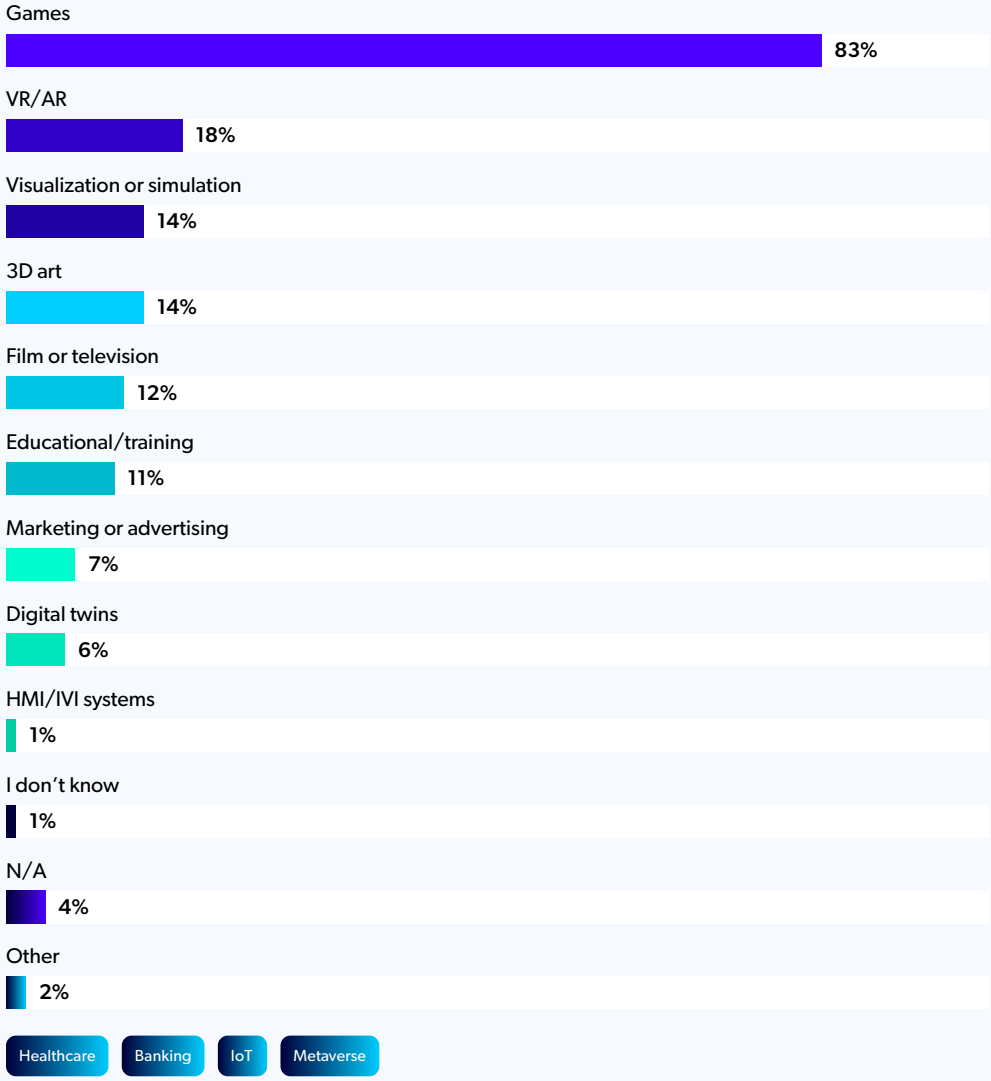
Game engine technology has evolved from specialized gaming software into versatile 3D creation engines driving innovation across multiple sectors. Our data reveals significant growth in cross-industry adoption: 18% of respondents now leverage game engines for VR/AR (up from just 4% last year), 14% for visualization and simulation (also up from 4% last year),14% for 3D art creation, and 12% for film and television.

This widespread adoption stems from three key factors we identified in our 2024 report: increasing project complexity, consolidation of technology toolsets, and access to cutting-edge capabilities within modern game engines. The past year has demonstrated how this technology continues to transform diverse industries in powerful and innovative ways.

For example, film production teams used Unreal Engine to pre-visualize shots and lighting for Dune: Part Two (one of 2024's highest-grossing films), while real estate developers applied the same technology to create an immersive digital twin for EDGE Liverpool Street—a zero-carbon office building in central London scheduled for completion in 2029.

The impact extends well beyond entertainment and construction. Medical teams at Cincinnati Children's Hospital now leverage Unity to enhance surgical procedures through accurate anatomical digital twins for surgical planning, while Ford Motor Company partnered with Cocos Technology to develop smart cockpit solutions built on Cocos' real-time 3D-engine technology.

What Best Describes the Type(s) of Projects You or Your Company Are Using Game Engines/Real-Time 3D Engines To Develop?



Beyond Entertainment: Game Engines Redefine What Teams Can Accomplish

Our research reveals a dramatic shift; only 4% of M&E teams used game engines for AR/VR in 2024. This year that number jumped to 28%. What was once a niche is now mainstream.

From Operating Rooms to Stadiums

Today's real-time engines—like Unity and Unreal—are doing far more than powering video games. They're behind immersive, high-impact experiences across industries. What used to sound like science fiction—walking through a simulated operating room, remotely touring a secure data center, or rehearsing a concert in a virtual stadium—is now an everyday reality in healthcare, manufacturing, education, and live entertainment.

The ROI Reality Check

According to PwC's "Seeing is Believing" report, companies aren't just experimenting with AR/VR, they're seeing real results:

- **Training without risk:** Energy companies use VR to train staff on oil platforms without the risk or expense of on-site training.
- **Working without borders:** Healthcare consultants collaborate in shared virtual spaces across time zones—cutting travel costs and speeding up decisions for upcoming surgeries.
- **Reducing costs:** AR overlays give engineers real-time data while on the job, reducing downtime and improving accuracy.
- **Accelerating learning:** Immersive environments boost retention and create consistent outcomes across teams.

Game engines have quietly become a foundational tool across sectors—streamlining training, accelerating collaboration, and redefining how teams engage in complex environments. The shift isn't coming. It's already here.

The Expansion of Visualization and Simulation

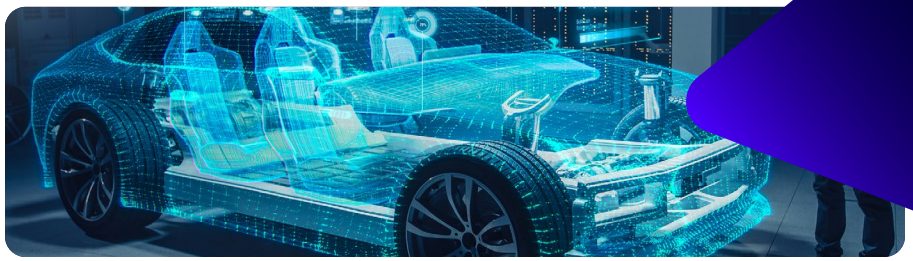
When broken down by industry, our survey found that respondents in Architecture, Engineering, and Construction (38%); Automotive and Manufacturing (29%); and M&E (26%) are the leading industries using game engines to develop visualizations and simulations. To understand this trend, let's break down each use case and look at some examples of each.

Visualization

Visualization is the process of creating high fidelity representations of objects such as vehicles, buildings/facilities, or products. These "digital twins" are typically 3D, interactive, photorealistic renderings with an underlying data component tying the model to real-world development.

Visualization has evolved rapidly in recent years to become more realistic than ever. Designers can now incorporate nuanced lighting, shading, and reflections to add dimension and perspective, or even shine a light into a vehicle rendering to better visualize the inside of an engine. While game engines are central to the development of digital twins, some of this advanced visualization functionality requires additional tools that connect to game engines, such as Twinmotion, Nanite, and Lumen for Unreal Engine, or Unity Industry, and HDRP Real-Time Global Illumination for Unity.

For instance, HOK Canada used Unreal Engine in their historic Centre Block rehabilitation project to give stakeholders virtual tours where they can review spatial relationships and identify design issues.



Simulation

Simulation takes visualization a step further to allow digital twins to mimic real-world behavior in a dynamic virtual environment. This is achieved by incorporating additional data sets, such as operational data from IoT sensors, environmental/contextual data such as weather or regulatory/safety constraints, or behavioral data such as user interactions. The results help teams understand how physical, environmental, human, or mechanical factors will impact a system without having to create physical prototypes. More advanced simulations may also incorporate machine learning (ML) data to fill in gaps in models or predict a system's behavior under a broader spectrum of conditions.

To illustrate this, when Chevrolet set out to make the Corvette ZR1 the fastest American made production car, they used advanced simulation technologies and digital twins to study performance, safety, and aerodynamics. The result: the car's actual top speed was within 1.09 mph of the simulated prediction.

Why Organizations Are Embracing Visualization and Simulation

As suggested by the examples above, visualization and simulation offer teams numerous benefits:

- **Real-Time Visibility for Faster Iteration:** Game engines enable instant renderings of models and environments. Compared to traditional methods, this saves time and resources by allowing teams to visualize changes, fix errors, and iterate in real time, closing the feedback loop from ideation and concepting to final design.
- **Enhanced Collaboration and Decision-Making:** Clients, designers, engineers, and other stakeholders can use game engines to collaboratively explore and interact with the product they are developing. This facilitates better decision-making around factors such as special use, design intents, and project constraints.
- **Deeper Analysis:** Simulations allow engineers to perform more comprehensive analysis and study the effects of variables such as airflow, lighting, or temperature on objects or systems without costly real-world testing.
- **Improved Product Quality:** Simulations enable earlier validation and faster, more comprehensive testing across endless scenarios. They can also help detect design or system issues earlier in the development lifecycle, reducing costs—and potential recalls—down the line.
- **Risk Reduction and Safety Validation:** Teams can simulate hazardous conditions and system failures without putting people or assets at risk.
- **Training and Education:** Many companies have adopted visualizations and simulations as training tools. Vehicle piloting, equipment failures, and constructions accidents can be navigated virtually for more effective training.

Whether it's construction companies using real-time data visualization to monitor site progress or automotive designers running 95% of their autonomous vehicle tests virtually, visualization and simulation are key technologies future developers will likely need to master.

From Experimentation to Integration: The Maturing Generative AI Landscape

The Acceleration of Generative AI Adoption

Generative AI adoption continues to gain significant momentum across industries, with 70% of respondents now leveraging these tools—up from 65% last year. While ChatGPT remains the tool of choice (46%), we're seeing broader adoption of newer tools including Google Gemini (15%), Anthropic Claude (11%), and DeepSeek (10%). This diversification of tools signals a maturing market where organizations are finding specialized AI tools that better align with their specific needs and workflows.

The business case for generative AI implementation has never been stronger. According to IDC research, organizations are realizing $3.70 return for every $1 invested in generative AI technologies. This strong ROI is driving accelerated adoption, with 95% of professionals in a 2025 Thomson Reuters survey believing AI will be central to their organization's workflow within the next five years.

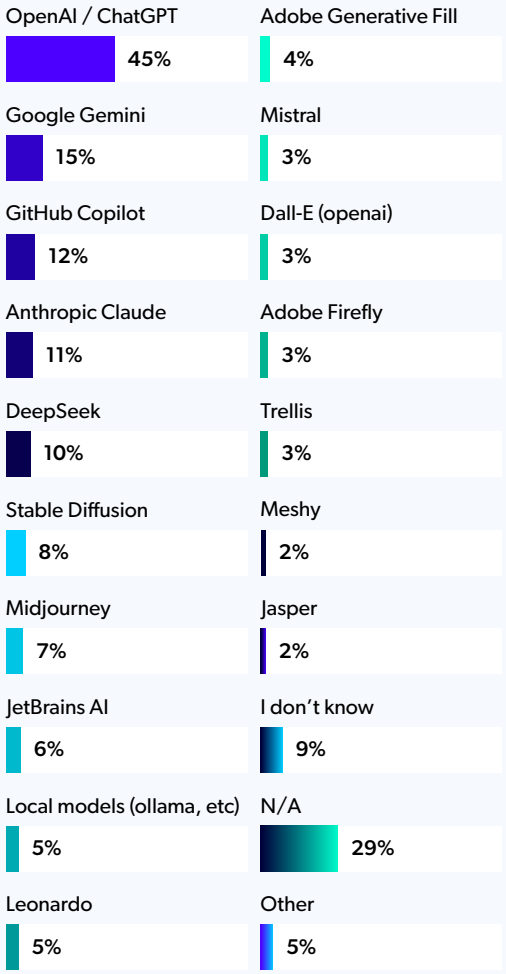
However, before companies fully capitalize on these benefits, several organizational barriers must be addressed. The IBM Institute of Business Value released a report where respondents identified these five key challenges organizations face when adopting generative AI:

- Data accuracy and bias concerns.
- Insufficient proprietary data access.
- Inadequate generative AI expertise.
- Weak financial justification or business case.
- Privacy and confidentiality concerns.

These obstacles are compounded by governance gaps—more than half of Thompson Reuters respondents (52%) said they believed their work lacked formal GenAI policies, and nearly two-thirds (64%) have received no generative AI training.

Organizations that proactively address these challenges now will position themselves to maximize value as generative AI evolves from an emerging technology into an essential business capability.

Which AI technologies (i.e. Large Language Models (LLMs)), AI Image Generation Tools, or 3D Model Tools Are Currently Used at Your Organization?

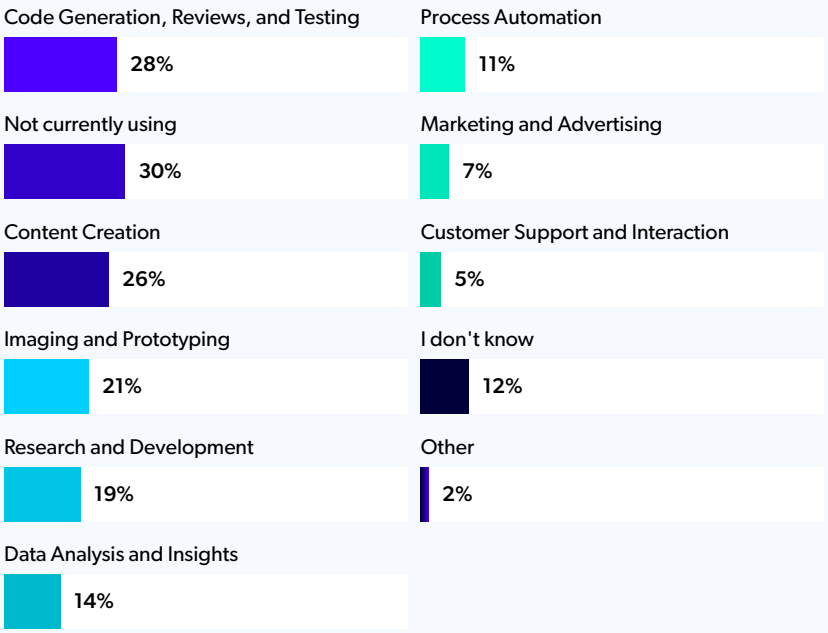


AI for Content and Coding

Last year, 65% of survey respondents said they've adopted AI tools into their workflows. This year we were curious how many used AI specifically for content creation and coding. We found 26% of our respondents use generative AI for content creation and 28% for code generation, reviews, and testing.

Perhaps most significant is how many companies in the Automotive and Manufacturing sectors have embraced AI. 50% of those surveyed in these industries said they use AI for code generation, review, and testing. Additionally, 43% of those surveyed in Auto and Manufacturing also use AI tools for data analysis and insights.

How Is Your Organization Currently Using Generative AI in Its Workflows?



Why Automotive and Manufacturing Are Embracing AI Innovation

Automotive and manufacturing firms have begun adopting AI for coding and data analysis because their operational needs, data infrastructure, and strategic priorities align closely with the strengths of AI technologies:

Efficiency and Cost Reduction

Automotive and manufacturing sectors operate with tight margins in highly competitive markets. AI can reduce costs by improving design and development efficiency, optimizing manufacturing processes, and enhancing supply chain management.

Example: A study by US Manufacturing describes the major investments automotive companies have made, including $7 billion in AI-powered manufacturing by Ford. It highlights workforce upskilling, continual innovation, and key AI and automation technologies such as AI-powered vision systems, collaborative robots, and predictive maintenance systems.

Software Development

Generative AI can accelerate the software development lifecycle by drafting code, translating between programming languages, refactoring legacy systems, and automating documentation. Because these processes are crucial for rapid product cycles and complex system development across distributed teams, innovative automotive and manufacturing companies have begun to adopt AI.

Example: A report by McKinsey outlines how AI can be incorporated across the entire automotive software design lifecycle. From defining system architecture to developing and resolving test cases, AI can reduce human error and accelerate development cycles.

Safety and Compliance

AI-driven simulations and digital twins enable automakers to virtually test vehicles for compliance with crash safety and emissions standards without costly physical prototypes. Machine learning algorithms can also monitor real-time sensor data from vehicles to detect anomalies, predict component failures, and ensure ongoing compliance with safety regulations.

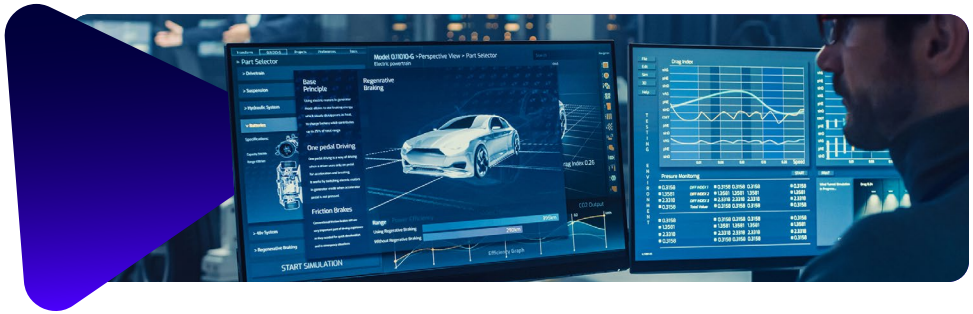
Example: Toyota Research Institute has developed generative AI models that incorporate engineering and safety constraints into the design process. Their generative AI tool can then run the digital prototype through simulated testing to identify potential issues earlier in the development process.

Collaboration Across the Value Chain

The automotive and manufacturing sectors generate enormous volumes of data daily. AI tools excel at processing and interpreting this data to identify insights and trends that can improve production efficiency across the product lifecycle.

Example: An article by Automotive Logistics discusses how major car companies use AI to enhance supply-chain visibility, agility, forecasting, and risk mitigation. AI-powered visibility tools keep cross-functional stakeholders on the same page, even amidst turbulence.

However, 36% of survey respondents cited file-sharing difficulties as a top collaboration barrier. Clearly, having the correct data management solutions in place is key to solving this problem and streamlining collaboration.

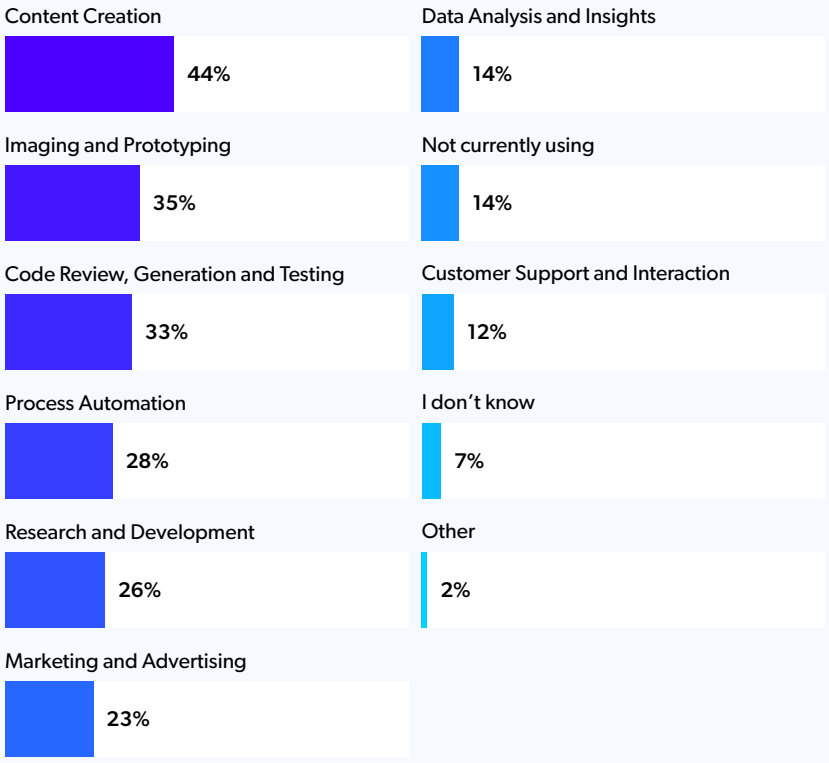


Media & Entertainment: Ground Zero for Generative AI

The M&E industry isn't just adopting AI—it's defining how it's done. Today, 86% of M&E respondents integrate generative AI into their workflows, outpacing all other industries. This builds on a trend from last year's report, where M&E not only led in adoption but also in the range of AI tools deployed.

How Is Your Organization Currently Using Generative AI in Its Workflows?

(Media and Entertainment Respondents Only)



Why M&E Leads the AI Charge

AI isn't replacing human creativity—it's supercharging it. According to the World Economic Forum (WEF)'s whitepaper ***Artificial Intelligence in Media, Entertainment and Sport***, the following trends explain why M&E is moving faster on AI than other industries:

The Need for Speed

Teams are under constant pressure to deliver more content, faster. 52% of creators (WEF) say AI boosts both creativity and efficiency—solving the scalability problem.

Personalized Content, at Scale

AI enhances the consumer experience by tailoring content across streaming, social, and search—driving deeper engagement and stickier audiences.

Lower Costs, Bigger Vision

AI accelerates the creative process by enabling faster ideation, prototyping, and visualization—helping teams explore concepts more efficiently and at lower cost.

A Steep Adoption Curve

In just one year, AI usage among creators jumped from 34% to 92% (WEF)—creating urgency for teams to adopt or risk being left behind.

AI Fits Naturally into Creative Workflows

Unlike in other sectors, AI capabilities plug directly into M&E pipelines, enhancing every phase of production—from ideation to final output.

Lights, Camera, AI!

M&E isn't just where AI adoption is happening fastest—it's where its full creative potential is being tested, refined, and realized. The workflows, breakthroughs, and bold experiments happening today will shape how every other industry creates, delivers, and connects with audiences tomorrow.

Take YouTube's Dream Track experiment: It lets creators generate 30-second AI soundtracks in the voices of artists like Charli XCX, Demi Lovato, and T-Pain—remixing the music-making process and bringing fans closer to the stars. This kind of experimentation isn't just flashy; it's a preview of how AI is transforming content collaboration, rights management, and audience engagement across industries. With the AI market for M&E projected to hit $120 billion by 2032, the industry is fast becoming a blueprint for scalable, personalized content delivery (WEF).

Insights from JetBrains

JETBRAINS

AI Trends

In the fast-moving landscape of AI tools, only ChatGPT and GitHub Copilot have sustained their popularity. A growing variety of AI technologies, including those we hardly observed last year, like Google Gemini (15%), Anthropic Claude (11%), and DeepSeek (10%), are now being used side by side with ChatGPT, which leads the race. Additionally, users seem dissatisfied with text-to-image models. Since last year, the popularity of tools like DALL·E, Midjourney, and Adobe Generative Fill has dropped significantly.

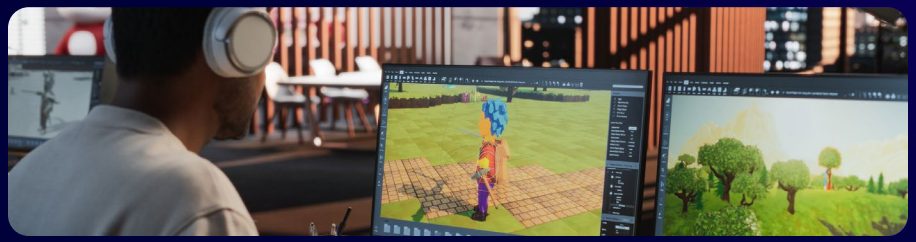
However, caution toward AI persists, as the percentage of respondents not using AI in their workflows has only decreased from 34% to 30%.

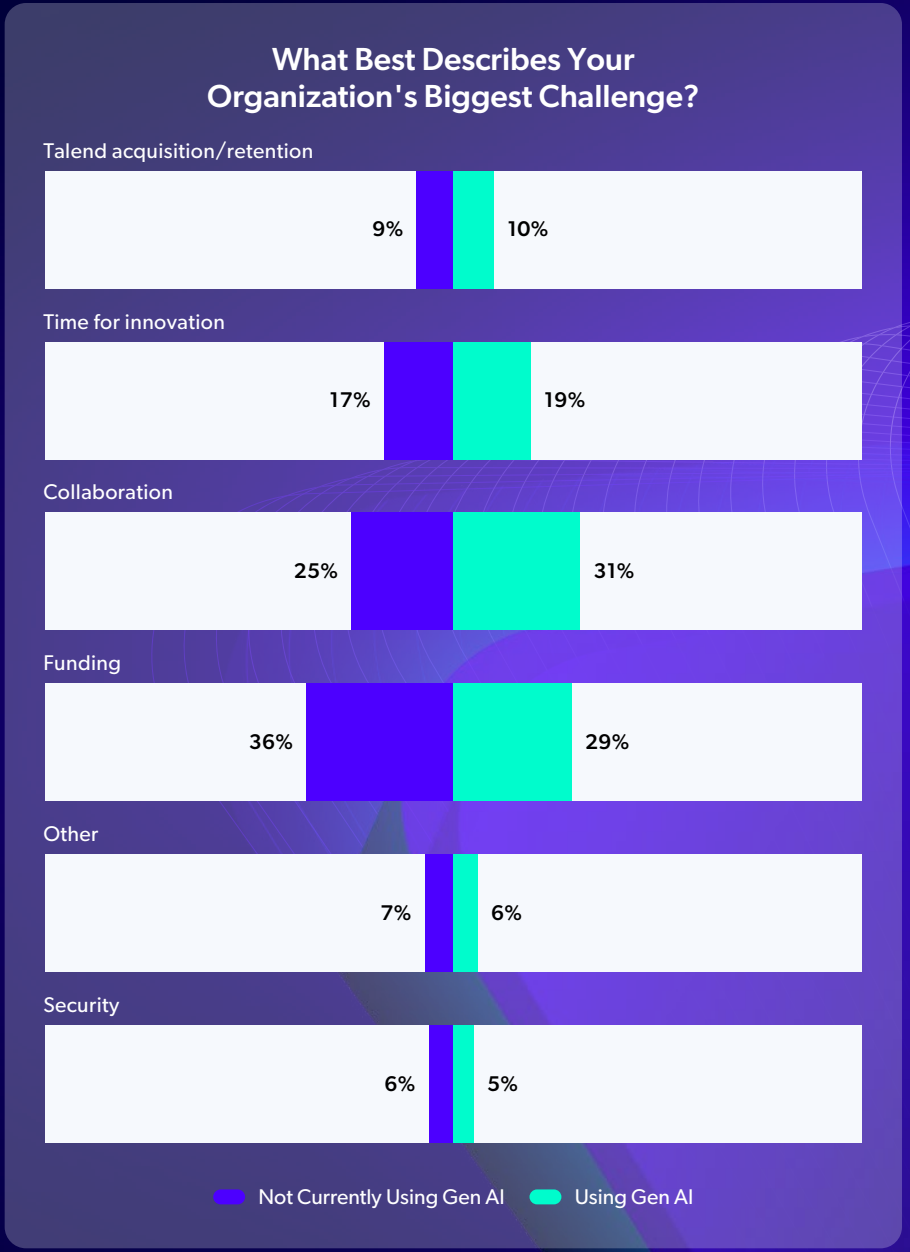
AI vs. Non-AI Users

We compared responses from people who use AI in their workflows with those who don't.

Regardless of AI use, the biggest challenges remain the same across both groups, with almost identical proportions. Notably, both groups point to the same barrier to innovation: a lack of team members and/or knowledge. It seems that even AI cannot overcome the fundamental challenges posed by a shortage of resources and insights.

Non-AI users were also more likely to say they either don't use or aren't sure whether their organization uses CI/CD automation.





The Challenges Impacting Teams Across Industries

Across every industry, 31% of respondents listed Funding as their top challenge, consistent with findings from last year's report. Collaboration emerged as the second biggest challenge, with 29% of respondents highlighting it, up from 21% the previous year. Additional hurdles respondents listed include managing increasingly complex work, unclear ownership of projects, and general disorganization.

The Resource Reality: Funding Remains the Primary Hurdle

Funding constraints continue to shape decision-making across all sectors, with 31% of respondents citing it as their top challenge, compared to 36% last year.

The current economic climate has forced organizations to make challenging investment decisions. According to a McKinsey & Company survey conducted between April and May 2025, over 60% of consumers have either changed or plan to change spending habits due to recent tariff announcements. Of those planning to adjust, more than 50% aim to cut back on nonessential spending.

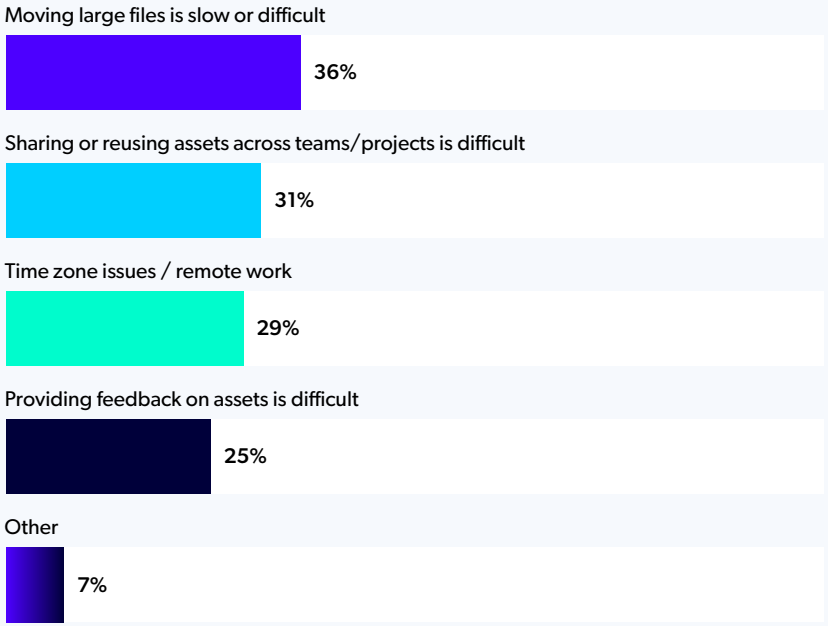
These trends are having a pronounced impact on creative industries, such as gaming and media & entertainment, where products often fall into the nonessential category. Faced with economic pressures, major publishers are shifting their strategies to their most reliable franchises. A striking example is the cancellation of EA's Black Panther game and the subsequent closure of Cliffhanger Games in May 2025. EA's strategic pivot to emphasize Battlefield, The Sims, Skate, and Apex Legends reflects how companies are concentrating resources on proven intellectual property rather than risking new ventures.

Collaboration Challenges Across Industries

Teams across various industries continue to face significant challenges in collaboration. A key struggle, cited by 36% of respondents, is moving and handling large files effectively. Additionally, 31% of respondents revealed that sharing or reusing assets across teams and projects remains a difficult task.

These challenges vary by industry. Moving large files proves especially difficult for respondents working in gaming (37%) and media & entertainment (42%). Meanwhile, sharing and reusing assets presents the greatest obstacle for those in the automotive and manufacturing sectors (64%) and the education field (44%).

What Challenges Do You or Your Team Have With Collaboration?



Innovation Stalled by Talent Shortages

A lack of team members emerged as the biggest barrier to innovation, cited by 45% of respondents, followed by inefficient processes or workflows (32%).

Across industries, this shortage of personnel was a common challenge, with the issue being most pronounced in Architecture, Engineering, and Construction (50%), as well as Auto and Manufacturing (50%).

The Auto and Manufacturing sectors, in particular, face mounting workforce challenges. Current U.S. job data reveals nearly half a million unfilled manufacturing positions, and projections estimate the industry will require 3.8 million additional workers by 2033. Filling these roles is proving difficult due to several factors, including:

- A shortage of skilled workers
- Insufficient pay
- Negative perceptions of the manufacturing industry
- Limited access to programs for acquiring industry-relevant skills

Leading Challenges Across Regions

Though funding was the leading challenge amongst all respondents, our survey found notable regional trends:

Funding

Funding is the greatest hurdle for respondents in LATAM (53%) and EMEA (36%), reflecting global economic uncertainty and trade policy developments specific to these regions.

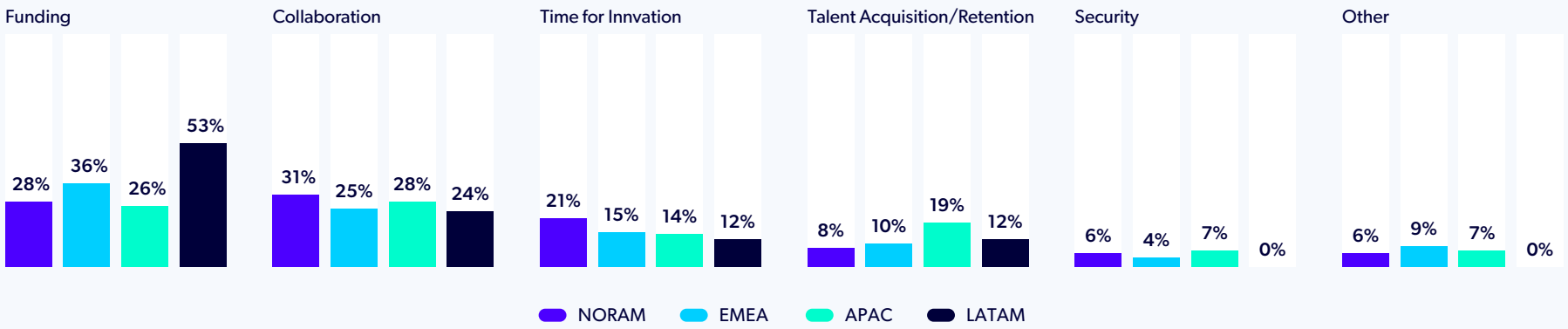
Collaboration

Collaboration challenges dominate in NORAM (31%) and APAC (28%), pointing to persistent issues around remote work and disengagement amongst employees.

Time for Innovation

Time for Innovation continues to be a concern for NORAM (21%), unchanged from last year. However, this challenge decreased in APAC (from 20% to 14%) and LATAM (from 20% to 12%), suggesting productivity improvements in these regions.

What Best Describes Your Organization's Biggest Challenge?



Cross-Industry Game Technology Trends

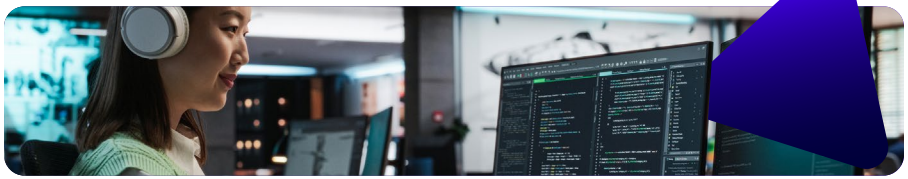
Unreal Remains at the Forefront of Game Engine Innovation

Unreal Engine remains at the forefront of game engine innovation, with 65% of respondents using it this year, maintaining its dominant position from last year (63%). Unity follows as the second most popular game engine, showing growth with 53% of respondents adopting it, compared to 47% last year.

The release of Unreal Engine 5.6 has introduced significant enhancements, making it easier for creators to develop high-fidelity, large-scale open worlds and lifelike characters. Key improvements include:

- **MetaHuman Enhancements:** The MetaHuman Creator is now fully embedded in Unreal Engine, streamlining creative workflows. Metahuman Animator allows real-time facial motion tracking from a single camera, and the ability to animate a full face from just an audio file makes realistic animation faster and more expressive. Unreal Engine Outfit asset enables the automatic resizing of complete outfits for MetaHumans.
- **Lumen (Hardware Ray Tracing) Updates:** Enhancements have eliminated major CPU bottlenecks, enabling the creation of intricate scenes while maintaining a smooth 60 FPS frame rate.
- **Redesigned Motion Trails:** Offers a more visual and intuitive way to edit animations, enhancing the animation workflow.

With advancements in AI and cutting-edge technology, Unreal Engine continues to expand its influence across industries and use cases.



Godot Use Continues to Surge Across Industries

In last year's report, we noted a marked rise in the use of Godot game engine. In 2024, 9% of respondents said they used Godot. In 2025, the numbers are essentially double with 15% of respondents in Education, 19% in Architecture, Engineering and Construction, and 21% in Automotive and Manufacturing reporting that they use Godot.

Why Godot is Gaining Traction

Last year, we theorized that Godot's free license, ease of use, and vibrant community contributed to its popularity. While these are still likely factors, let's consider more reasons for Godot's expanding audience:

- **Workflow Integration:** Godot's lightweight footprint and modular architecture allow for easy integration with existing tool chains.
- **Multi-Language Support:** Godot's support for GDScript, C#, C++, and community bindings for other languages (Rust, Python, JavaScript) allows teams to use familiar languages and integrate with existing systems.
- **Cross-Platform Support:** Godot supports 2D, 3D, desktop, mobile, web, and XR (AR/VR/MR) development, allowing companies to build applications that run on a wide range of devices and platforms.
- **Scene-Driven, Modular Workflow:** Its node-based, scene-driven design makes it easy to build complex, reusable components.
- **Customizability:** The permissive MIT license and customizable source code give technical teams the freedom to adapt it to specialized simulation, visualization, or training purposes.
- **Recent Updates:** Improved 3D rendering with Vulkan support, robust real-time simulation capabilities, improved physics via Jolt engine, and enhanced export options have significantly broadened Godot's appeal.

Godot's Appeal by Industry

Gaming: Many indie studios and those focused on 2D or smaller 3D projects, often choose Godot for its accessibility, open-source nature, and ease of use. Godot showcases numerous games produced using its engine on its website. One MOD developer surveyed in our report stated:

"The rise of Godot 4+ is rather unexpected and I expect that Godot will become the leading indie game engine in future, while Unity becomes less popular."

Education: Educators benefit from Godot's free, easy to learn, multi-platform, and helpful community. A case study details the creation of an educational game targeted at pharmacy students, completed in about 40 hours.

Architecture, Engineering, and Construction: Godot's 3D and XR features facilitate virtual walkthroughs and real-time construction simulations.

Automotive and Manufacturing: Tesla utilizes the React Native Godot Engine in the Tesla app for 3D vehicle visualizations, allowing users to interact with detailed models of their cars. Since these industries operate on tight margins, Godot's free license is likely a strong factor in its adoption by these sectors.

The Appeal of In-House Gaming Engines

The number of respondents building their own gaming engines is up slightly from 11% in 2024 to 14% in 2025. Our survey saw that 29% of respondents in Automotive and Manufacturing chose to build their own proprietary engines. Let's look at why some companies, and especially those in Auto and Manufacturing, are doing it themselves.

Benefits of Custom Builds

- **Tailored Functionality:** Custom engines address the unique requirements of a specific workflow, product, or interactive simulation.
- **Cost Control and Licensing:** Owning your engine avoids ongoing licensing or fee changes that could impede your work.
- **Competitive Advantage:** A bespoke engine enables direct control over rendering pipelines, simulation accuracy, and integrates with proprietary hardware.
- **Data Security and IP Protection:** Keeping engine development internal allows organizations to better control sensitive assets and intellectual property.
- **Employee Retention and Expertise:** Developing and maintaining an in-house engine fosters a unique internal culture, which may help retain specialized talent.

An insightful survey response from a well-established game studio that uses its own proprietary engine acknowledges that "starting a new proprietary engine these days would be daunting." They go on to point out that some major engine providers have had disruptive or negative impacts on their customer base, noting "[a] custom engine insulates you from these things but comes at a high development cost."

While commercial engines offer powerful tools, they may limit customization and create long-term dependency. It will be worth tracking this trend to see if the major engine producers can keep their customers happy or if more organizations jump ship and develop in-house engines despite the upfront investment cost.

Insights from JetBrains

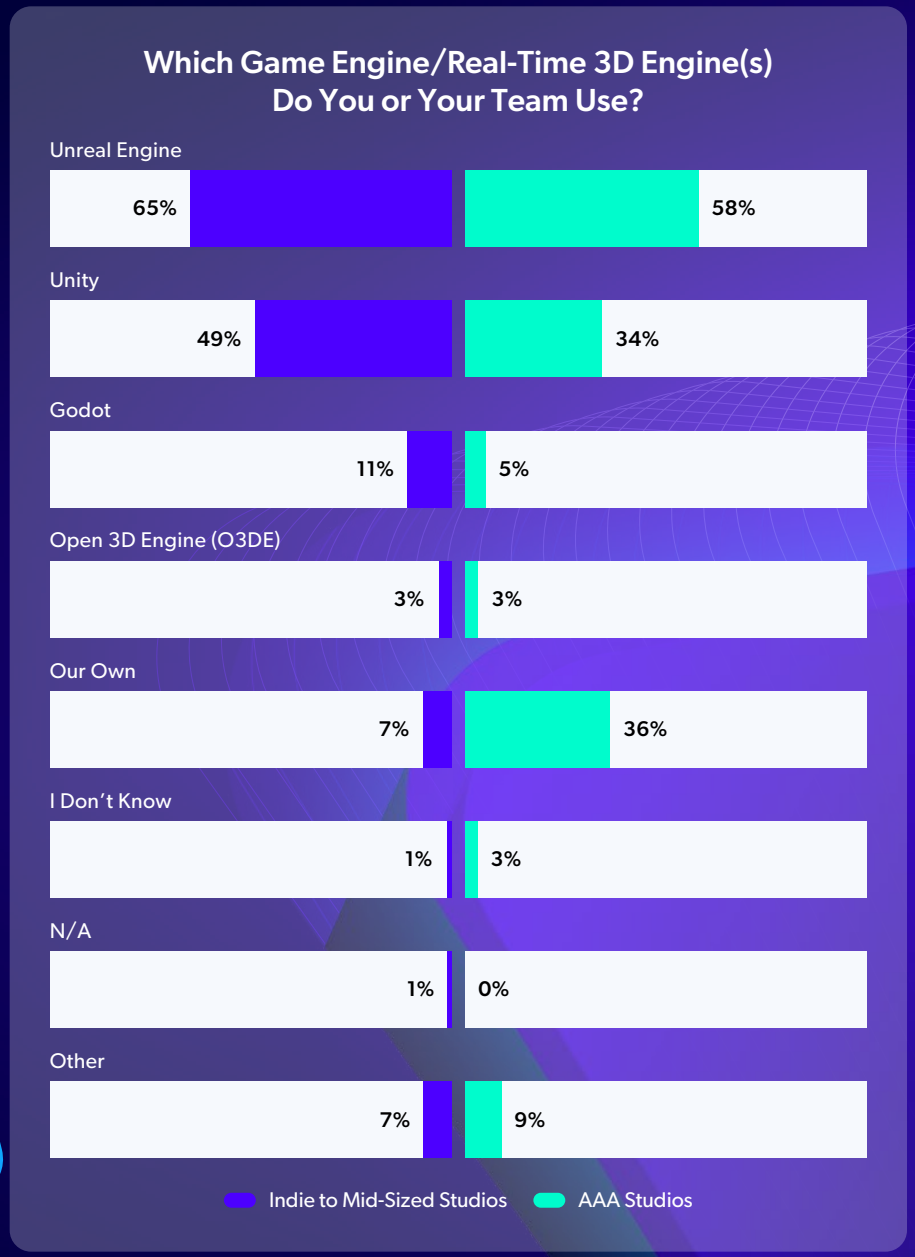
JETBRAINS

AAA vs. Mid-size Game Development Companies

Just like in 2024, we analyzed the differences between AAA and mid-size/indie segments, focusing specifically on game creators. While Unreal Engine's market share remained relatively stable compared to last year, in-house engines showed significant growth in AAA studios (9% YOY). This suggests AAA studios may be investing more into their own proprietary technology

Conversely, Unity's share decreased slightly in the mid-size segment (3% YOY) and grew slightly in the AAA segment (5%YOY). Could the latter somehow be related to the considerable increase in Godot's adoption, particularly within AAA studios (from nearly 0% to 5% this year)?

JetBrains is pleased to see Godot's year-over-year growth, particularly given its competition with established engines like Unity and Unreal Engine. We value the diversity of thought and experience in the software industry, such as the many different programming languages and related ecosystems. We can see that there is ample scope for multiple game engines, especially for not-for-profit, open-source game engines, and we are delighted to announce that JetBrains is now a Platinum Sponsor of the Godot Foundation.



Essential Tools for Developers

Scaling Success: Why Version Control Is Critical Today

The increasing complexity of modern projects is pushing the limits of scalability across industries. For instance, AAA game development can generate over a million build files and more than 5 terabytes of content, while semiconductor servers can process up to 70 terabytes of data, handle 7,000 submissions, and execute 45 million commands daily.

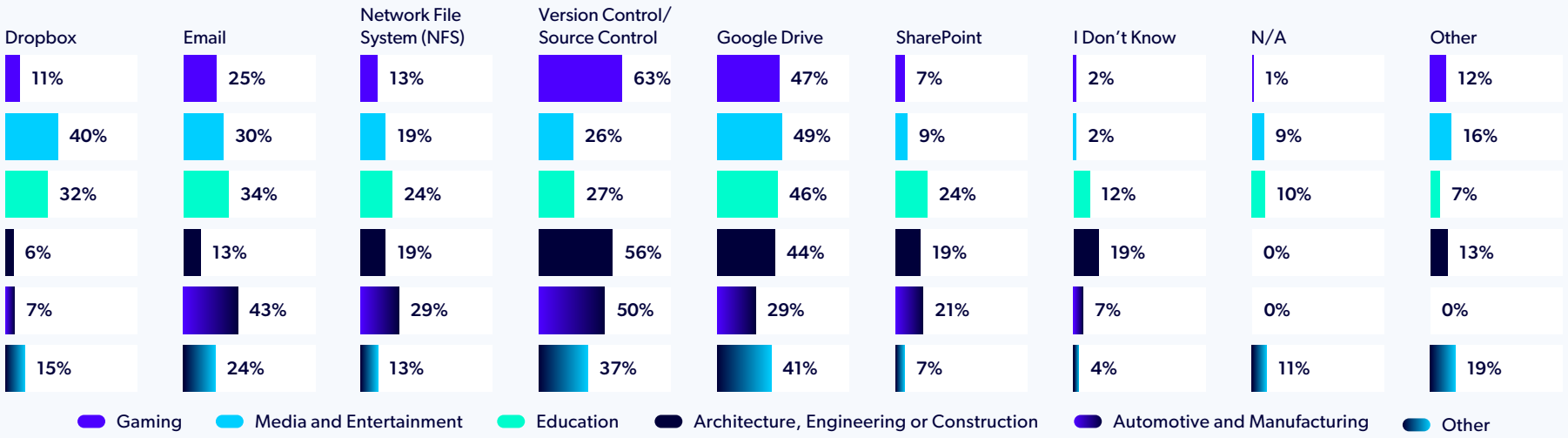
These demands emphasize the critical need of version control systems in managing this scale effectively. This was evident in our survey results, with 86% of respondents integrating version control tools into their workflows. This widespread adoption underscores how indispensable these systems have become across diverse industries.

Among the industries leading in version control adoption for managing source files and digital assets, the top three are:

- **63%** in Gaming
- **56%** in Architecture, Engineering, or Construction
- **50%** in Automotive and Manufacturing

Version control systems are more than a necessity—they are the backbone enabling organizations to collaborate efficiently, manage changes seamlessly, and maintain high-quality outputs in a complex landscape.

Which Tool(s) Do You or Your Team Use for Storing and Sharing Source Files and Art Assets?



Challenges of Google Drive and Dropbox

The industries with the lowest usage of version control were respondents in Media and Entertainment (26%) and Education (27%). These sectors primarily rely on tools like Dropbox and Google Drive to share source files and art assets. However, both industries report significant challenges when managing large files, with 37% of Media and Entertainment professionals and 32% of Education respondents citing slow and difficult file transfers as a top concern.

While Dropbox and Google Drive offer convenience and seamless integration with everyday tools, they come with notable limitations:

- **Primarily serve as storage solutions:** These tools are not designed for managing complex workflows or version histories.
- **Limited support for file relationships and collaboration:** They lack robust capabilities to track team contributions or handle interdependencies between files.
- **Risk of multiple sources of truth:** Without centralized management, projects often end up with conflicting file versions or duplicated assets.
- **Weak access control:** Broad permissions increase the risk of oversharing sensitive files.
- **Pipeline limitations:** These platforms don't integrate well with creative pipelines or allow for automation.

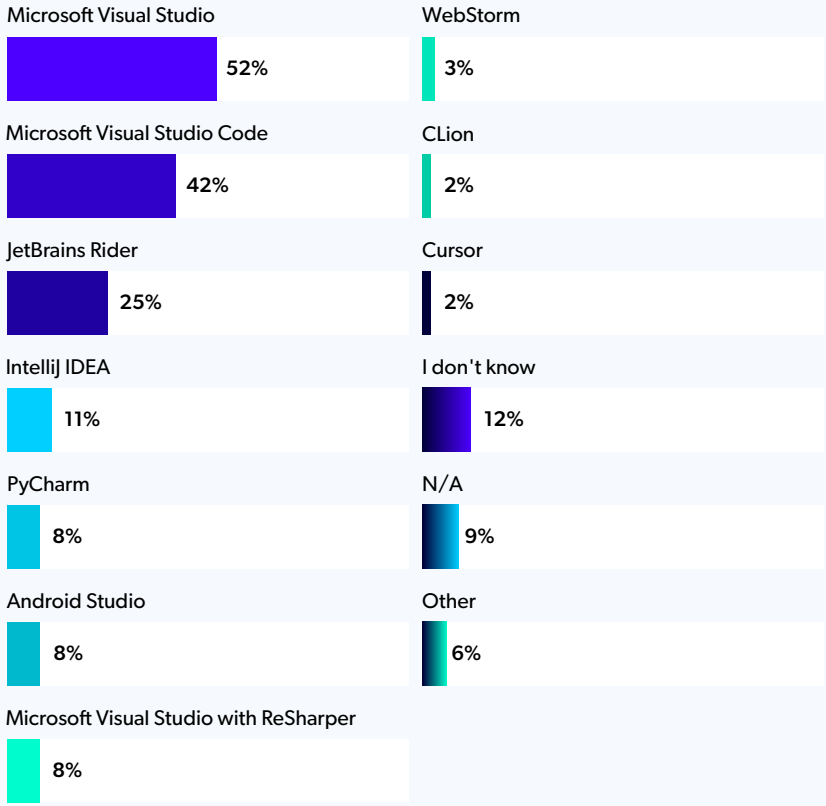
For industries dealing with large-scale, collaboration-heavy projects, these limitations underscore the need for a version control system that can support both the complexity and scale of their work.

Integrated Development Environments (IDEs)

This year, the top three Integrated Development Environments (IDEs) identified by respondents were Microsoft Visual Studio (52%), Microsoft Visual Studio Code (42%), and JetBrains Rider (25%). However, a notable trend emerged as the popularity of Microsoft Visual Studio declined compared to last year when it was used by 60% of respondents.

Conversely, the adoption of IntelliJ IDEA showed an upward trajectory, increasing to 11% from last year's 8%. These shifts illustrate the evolving preferences among developers and highlight a growing diversification in the tools they rely on to streamline and enhance workflow efficiency.

Which IDEs (Integrated Development Environment) Do You or Your Team Use?

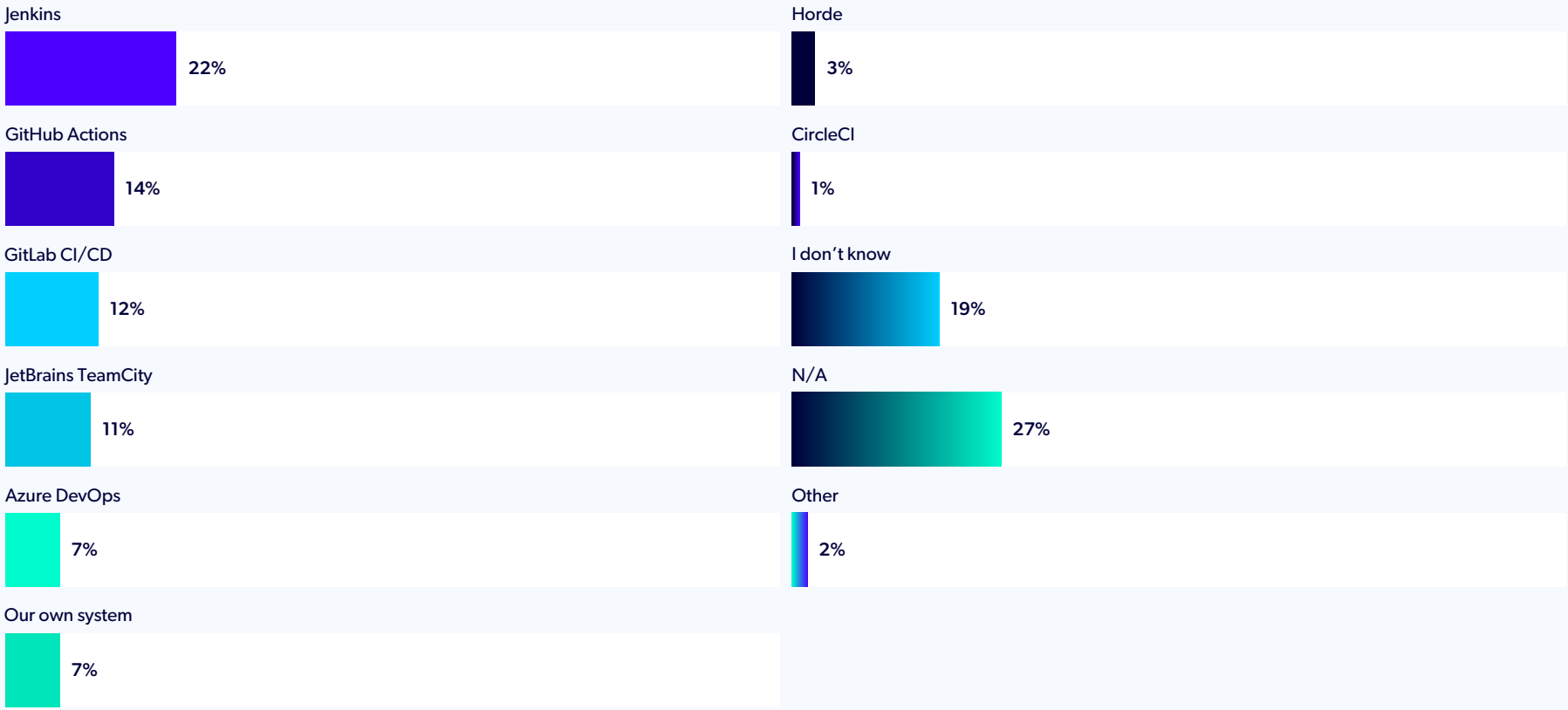


CI/CD

Consistent with our findings last year, the top four most-used CI/CD tools were Jenkins (22%), GitHub Actions (14%), GitLab CI/CD (12%), and JetBrains Team City (11%). A significant trend worth noting is the growing adoption of these tools. This year, 73% of respondents reported using CI/CD tools—an increase from 68% in the previous year.

This upward trend underscores the critical role CI/CD tools play in modern development environments. Organizations are increasingly leveraging these tools to streamline workflows, enhance efficiency, and integrate automation seamlessly into their processes.

Which Tool(s) Do You or Your Team Use for CI/CD (Continuous Integration and Continuous Delivery)?



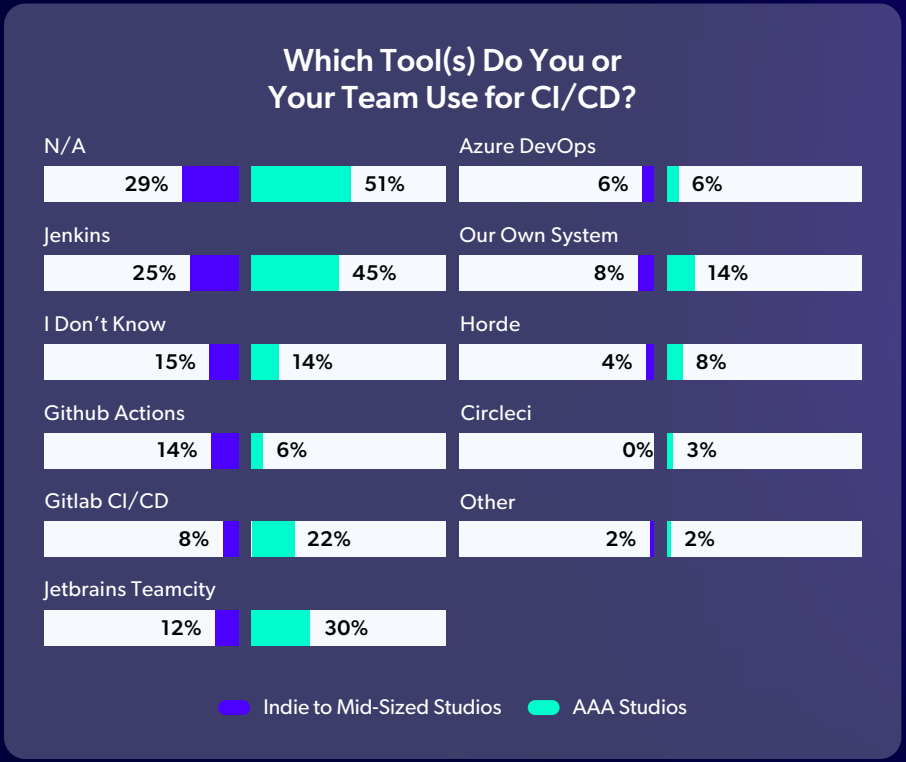
Insights from JetBrains

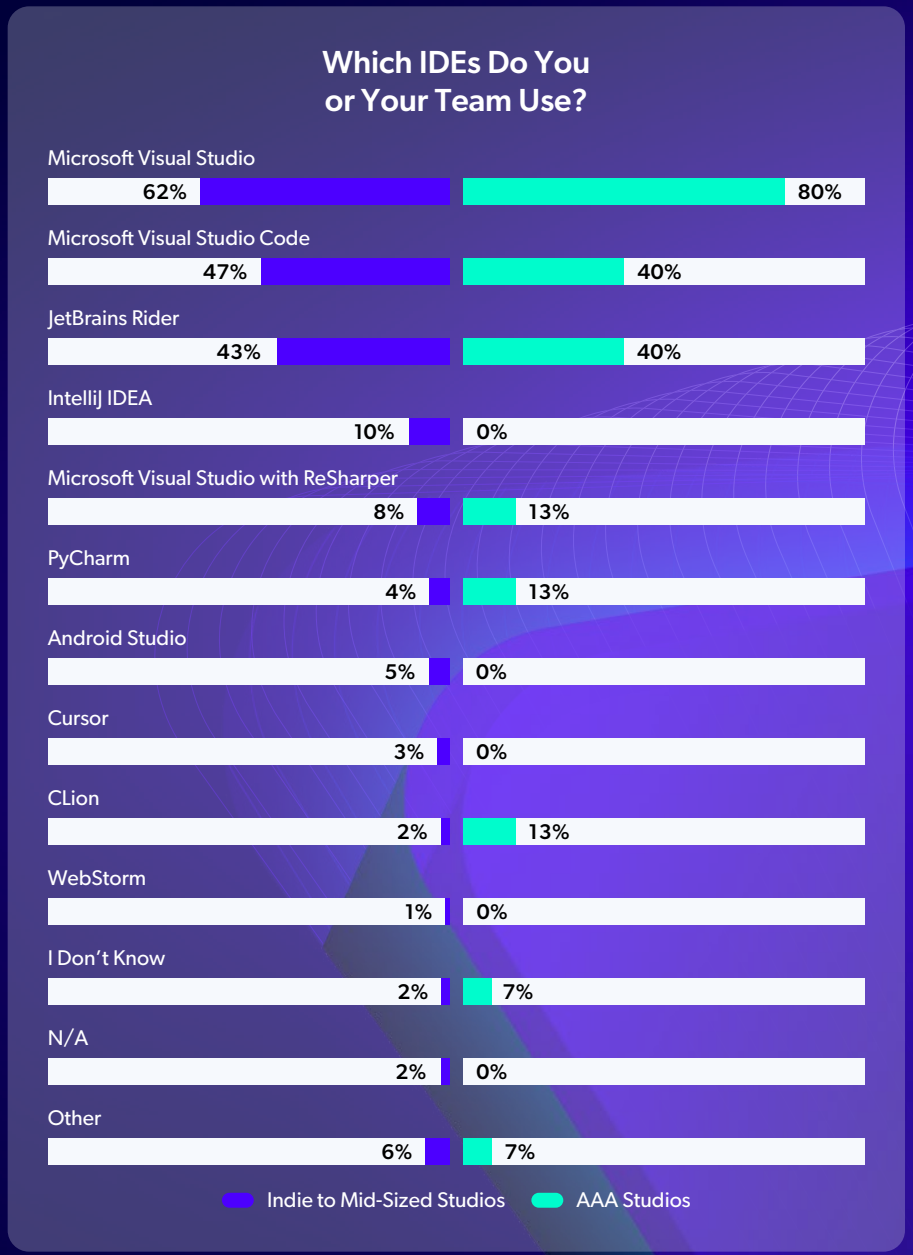
JETBRAINS

AAA vs. Mid-size Game Development Companies

The IDE choices of game developers reflect the preferences of mid-size and AAA companies. Microsoft Visual Studio dominates in AAA studios, likely due to its integration with other technologies. Smaller companies, however, favor the lighter-weight Visual Studio Code. JetBrains Rider maintains a similar market share in both segments. As the IDE was recently made free for non-commercial use, aspiring game developers can now postpone their purchase decision.

The CI/CD market share is similar to what we observed in 2024. However, we were pleased to see TeamCity's growth among AAA studios.





Small vs. Large Organizations: Challenges and Technology Adoption Across Industries

JETBRAINS

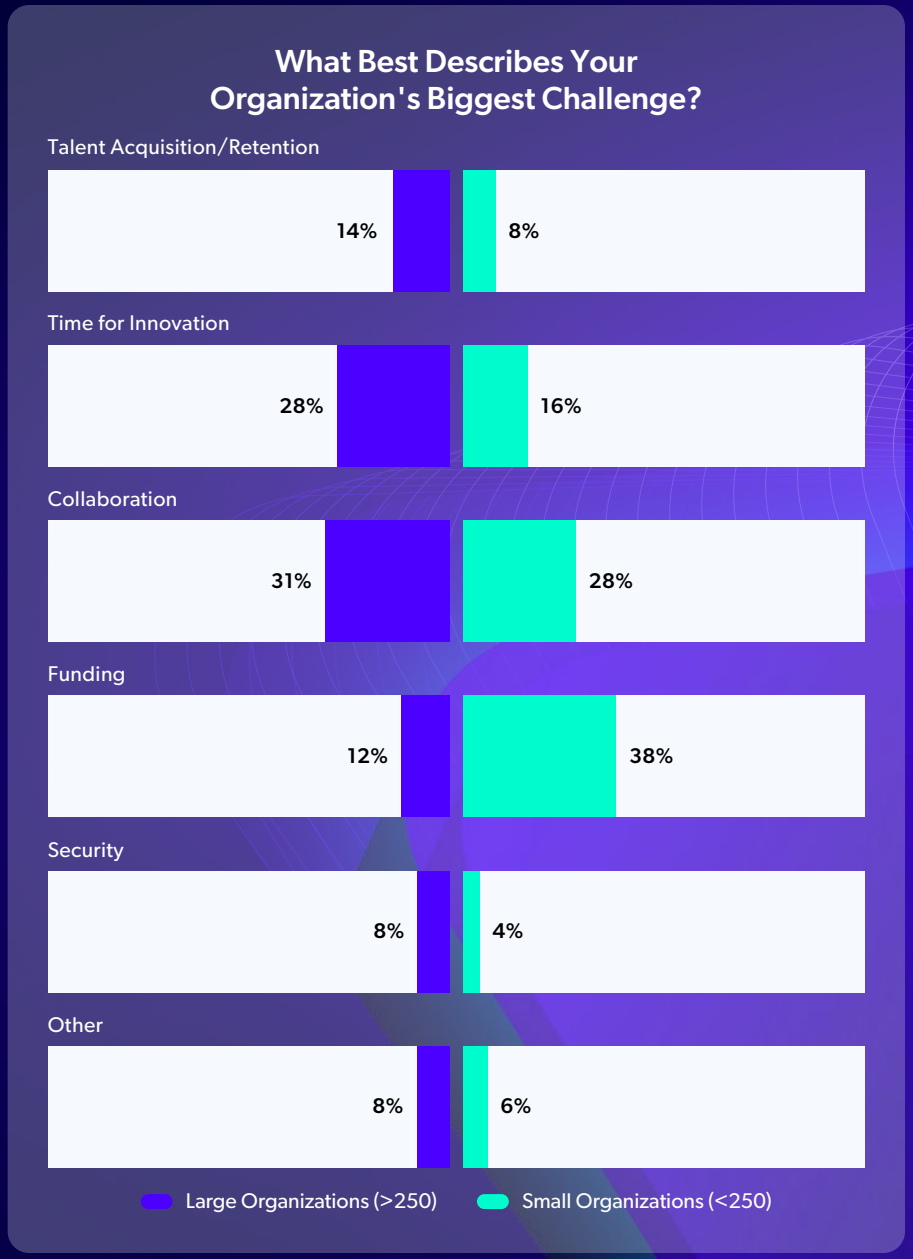
As in previous years, we compared small and large organizations, but this time our focus extended beyond game development studios. In fact, 32% of respondents came from related industries.

For small organizations, funding remains the top challenge. For enterprises, it's collaboration. When it comes to innovation bottlenecks, small teams cite a lack of people or knowledge and inefficient processes. Large teams echo the first challenge, adding pressure from aggressive timelines.

Interestingly, AI adoption levels do not differ meaningfully between small and large organizations.

Custom game engines are still primarily used by large organizations. However, Godot is starting to appear in responses from larger teams as well, suggesting that it may be expanding beyond its indie roots. JetBrains' data supports this trend.

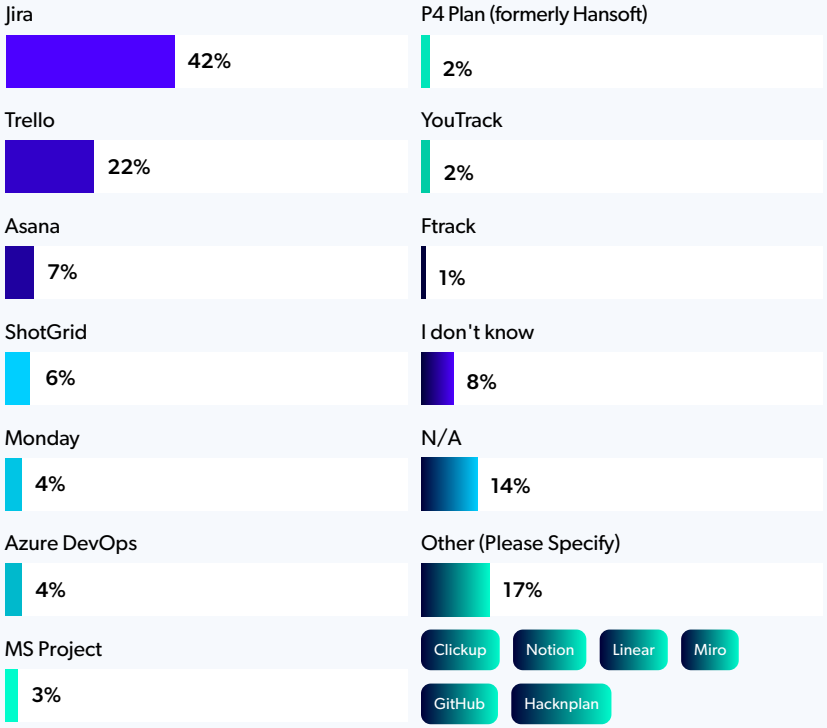
Our findings on CI/CD adoption trends were also reinforced. Jenkins continues to be widely used, especially in large organizations, while many smaller teams still lack CI/CD automation. JetBrains' data also confirms this.



Project Management Tools

Jira remains the leading project management tool, with 42% of respondents using it, an increase from 39% last year. Consistent with previous findings, our survey revealed that many project managers rely on a combination of tools to address industry-specific requirements. Notably, this year showed a broader distribution of usage across more than 15 different tools, compared to 11 tools last year. This trend highlights the growing diversification of tools as organizations seek tailored solutions to meet their evolving needs.

Which Tools Were Used To Manage the Project Backlog of Your Most Recent Project?



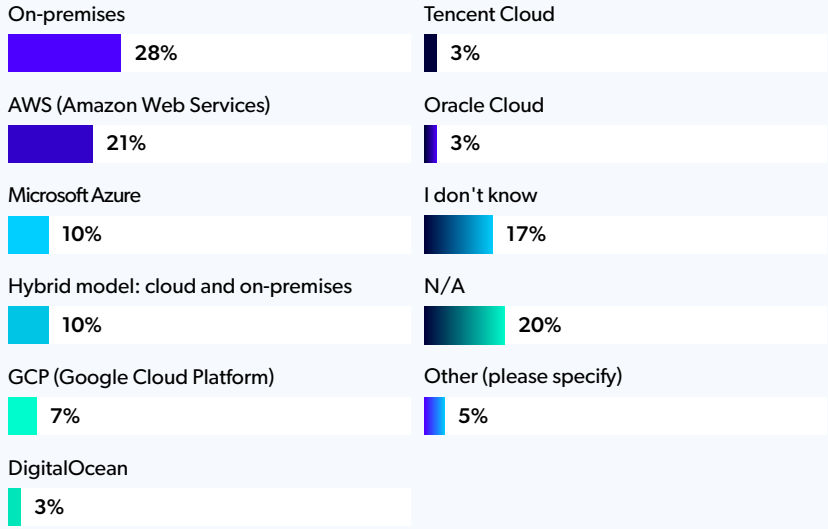
Development Across Industries

AWS maintains its position as the leading cloud provider, with 22% of respondents across various industries utilizing it for project development and operations.

This year's data highlights several notable trends:

- **Rising adoption of hybrid models:** 10% of respondents now use a combination of cloud and on-premises solutions, up from 6% last year.
- **Preference for on-premises development:** 28% of respondents favor building exclusively on-premises.
- **Decline in Microsoft Azure usage:** Only 10% of respondents reported using Azure this year, a significant drop from 18% in 2024.

How Do You Develop or Build Your Projects? Please Designate Any and All Cloud Service Providers.



Essential Tools for Artists and Creatives

The Usual Suspects

Our analysis reveals remarkable consistency in the tools artists and creatives rely on to bring their visions to life. For the second year in a row, three powerhouse tools dominate the landscape: Blender (50%), Adobe Creative Cloud (42%), and Maya (41%). These tools aren't going anywhere; they've become the bread and butter of digital content creation.

Beyond these core applications, specialized tools maintain their crucial roles with ZBrush used by 25% of respondents and Houdini showing modest growth at 17%.

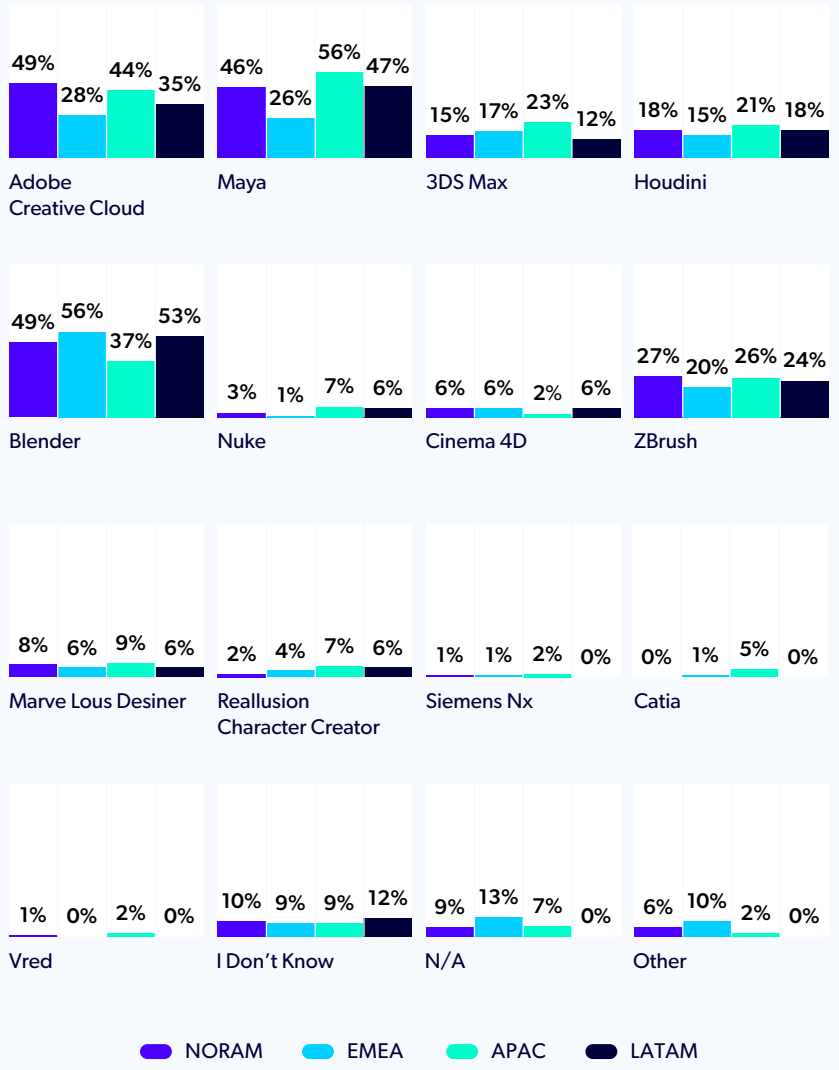
Regional Variations in a Global Landscape

While these tools dominate globally, our regional analysis reveals interesting patterns in how they're implemented across different markets:

- **EMEA and LATAM** show stronger Blender usage (56% and 53%), driven by its open-source accessibility and collaborative nature, which aligns with cost-conscious and community-focused creative sectors.
- **APAC** leads global Maya adoption at 56%, driven by the region's strong animation and VFX industries. Maya remains a pipeline standard across many studios, supported by rapid digital growth and demand for high-quality visuals in mobile games and apps.
- **NORAM** has the highest Adobe Creative Cloud usage (49%), matching its mature commercial creative market and dense tech ecosystem focused on professional-grade content.

These regional preferences highlight how economic, cultural, and industry-specific factors shape tool adoption even within a relatively consistent global creative ecosystem.

Which Graphic Tools or DCCs (Digital Content Creation) Do You or Your Team Use?



Fixing the Pipeline for Creative Work

While core creative tools remain stable, AI integration has fundamentally changed how teams use them. Artists and creatives now enhance their established toolsets with AI for faster creative cycles, more exploration within tight deadlines, and automated repetitive tasks.

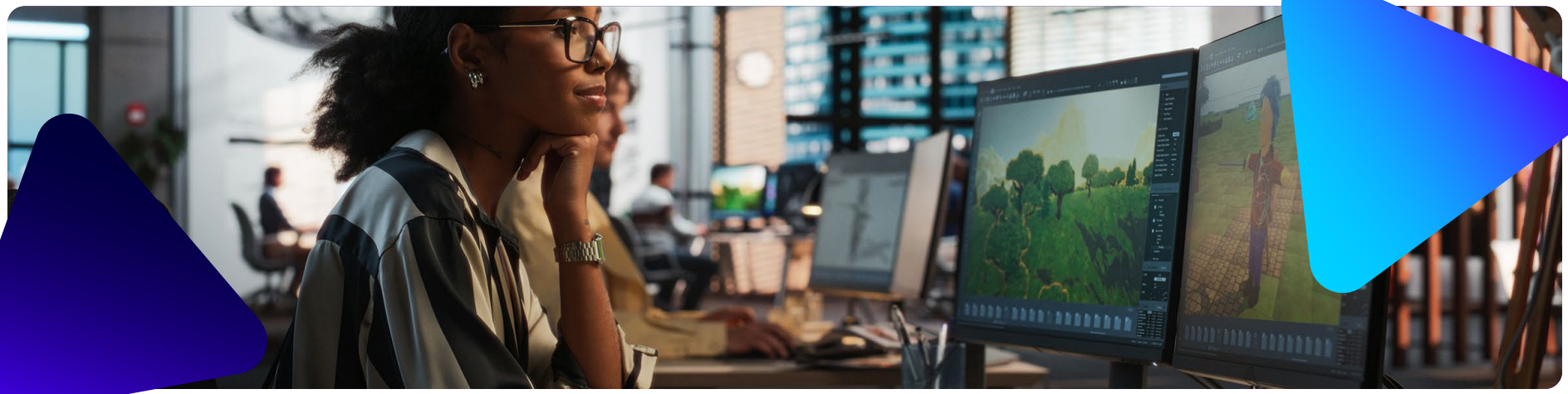
However, this evolution introduces new challenges. Teams now manage:

- **Larger File Sizes and Asset Libraries**
- **More Frequent Iterations and Variations**
- **Higher Expectations for Creative Output and Collaboration**
- **Increasingly Complex Relationships Between Assets and Versions**

The problem? Most infrastructure was built for code, not creative assets. This misalignment causes friction no matter which tools teams prefer—or where they work.

That's why solutions like P4 One matter. It delivers visual version control designed for artists, integrating naturally with tools like Blender, Maya, and Adobe Creative Cloud. Teams can preview assets visually, track variations, and collaborate—without changing the creative tools they trust.

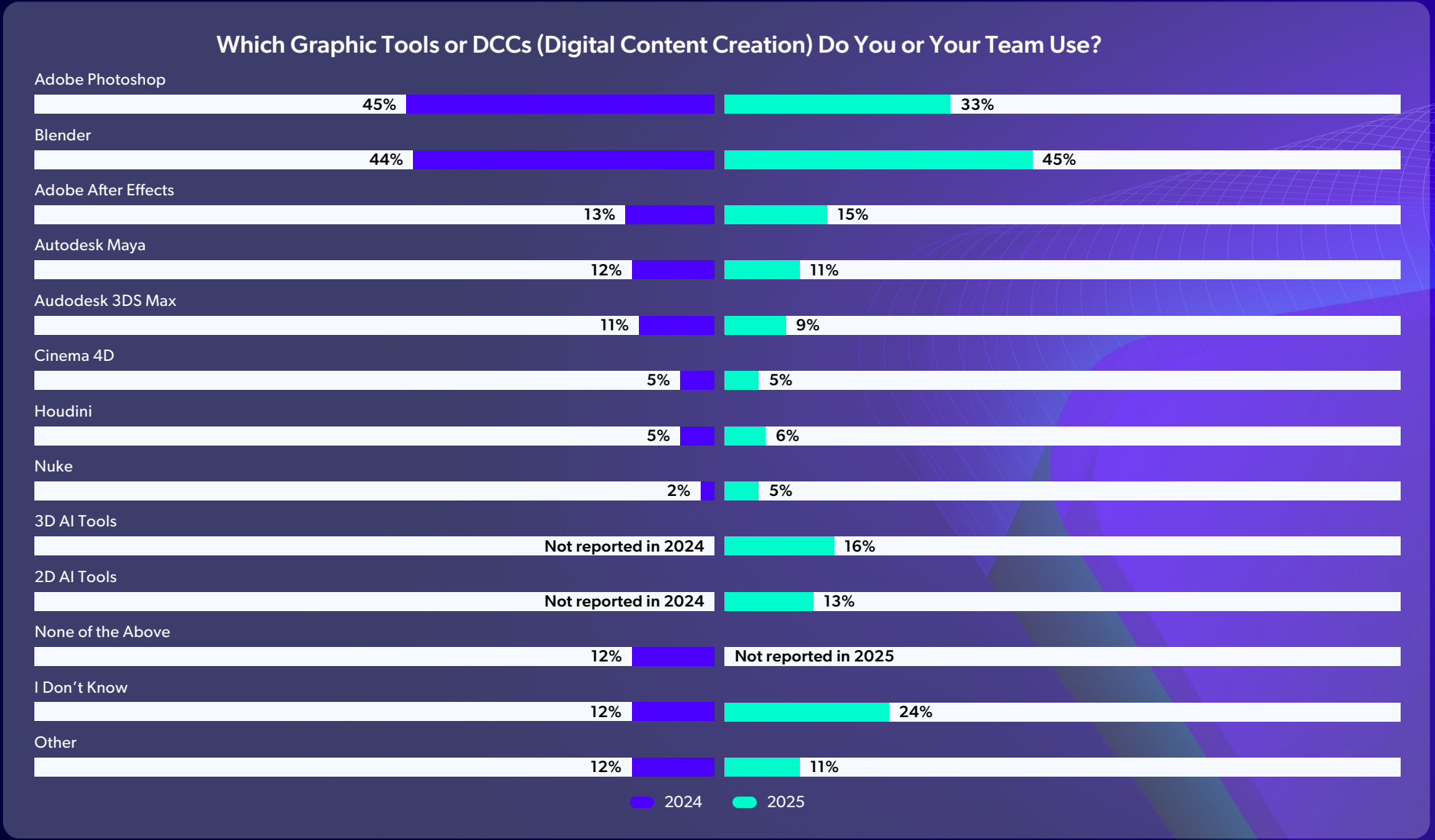
As global collaboration grows and AI becomes a standard part of production, investing in infrastructure that supports creative work—not just code—will be key. Teams that make this shift will reduce version chaos, ship more projects on time, and get more out of every AI-powered workflow.



Insights from JetBrains

JETBRAINS

Our data supports the Perforce findings that Blender overtook Adobe as the most popular digital content creation tool in 2025. However, when examining small and large organizations separately, Blender is the clear leader only among small organizations. When it comes to large organizations, Maya and Adobe Creative Cloud are the preferred tools.



Predictions and Sentiments: A Dialogue on Industry Evolution

This year we asked our respondents to share their thoughts and predictions on the influence of game engine technology and generative AI on their industries. We then invited our team of Perforce experts to respond to these insights, creating a dialogue between industry practitioners and our specialists. The resulting conversations reveal emerging patterns, challenges, and opportunities to look out for in 2026.

Below, you'll find direct quotes from survey respondents paired with analysis from our team—offering you both frontline perspectives and expert context on where these technologies are taking us.

How has the adoption of game engine technology influenced your industry, and what changes do you expect in the next 3 years?

"[The use of game engines has] streamlined all our workflows, so all the teams working on different titles use similar (might say the same) workflows to work. Someone from another project may join and do his/her work without having to familiarize himself with the project…"

VFX Lead Engineer

"I feel like this is part of the natural maturation of any technical arena or set of processes. This benefits both artists and studios in having the ability for an artist to quickly drop into any production and pipeline without a large learning curve to get up and running."

Ryan Maffesoli
Perforce Senior Solutions Engineer

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"Game Engines are much more friendly now, and many more toolsets, plugins, integrations, etc, exist. There has never been an easier time to use any Game Engine, big or small. I personally think that the traditional "engine" is on the way out. With things like Fortnite, Roblox, Minecraft, and the rise of "content generation games", players can build a game in their favorite games. I expect the technology to plateau, but for the usability to continue to increase as more and more people adopt these tools."

Indie Game Developer

"Game engines have completely changed how we build games, making it way faster and easier to create high-quality environments. Tools like Unreal Engine and Unity have streamlined workflows, allowing for real-time rendering, procedural generation, and quicker iteration. Over the next few years, I expect even more automation in asset creation, smarter AI-driven tools for level design, and better real-time collaboration, making it easier for teams to work together from anywhere. "

Junior Level Designer

Game engine technology helps integrate workflows and pipelines between various tools and software we use and helps speed up the whole process. Expect more software developers to provide better integration with the game engine to help studios shorten their release cycle."

Studio Owner

"Unreal has taken over the indie to AAA space in the last few years. Plugins and libraries are becoming more common and standardized. In the next several years game development will go down much the path of web development and shun in-house solutions in favour of conformity at the cost of performance."

Lead Software Engineer

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"The widespread adoption of commercial engines like Unity and Unreal has led to a noticeable homogenization of games — it's often trivial to tell which engine was used just by looking…The industry is slowly trading expertise for convenience — and paying for it in quality."

Response from Executive in Game Development

"While having a feature rich, easy to use game engine to start any project with may homogenize the technology used I personally don't feel this leads to a drop in quality. Large AAA teams will still have the time and resources to make their game unique, while smaller studios will be able to reach a higher level of quality than they would if they had to build their engine from scratch."

Ryan Maffesoli
Perforce Senior Solutions Engineer

"In the PlayStation 3 era and earlier, we used our own engine. That left us stretched pretty thin, developing both engine and game. With the power of current commercial engines, we've stopped doing that, switched to Unreal, and are more able to focus on the games themselves. On the flip side, the available engines have removed much of the barrier to entry, flooding the market with so many games that it's hard for anyone to stand out."

Chief Technology Officer

"Completely agree here. The use of commercial engines means faster velocity but also means more games being produced overall which makes it harder to stand out from the pack. Discoverability has never been harder and I don't see that changing anytime soon nor do I see game dev companies going back to proprietary engines."

Brent Schiestl
Perforce Senior Director of Product Management

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"Unreal Engine has made development so much faster and easier for us. The documentation is solid, and the tools cover almost every need—even for complex genres. These days, I feel like technology is no longer the bottleneck. The real challenge is art style—creating or sourcing the right visuals to match the game's identity. In the next few years, I think development will keep getting smoother, and more teams will focus on style, visual storytelling, and efficient art pipelines."

Lead Programmer

"This has also been reflected in the shift in numbers of artists/designers on a team relative to the number of developers/coders. In the early days of computer games, it was almost entirely coders, while today studios have a much larger proportion of artists, game designers, audio engineers, and other creative roles, since those are such an important part of a game's identity."

Jase Lindgren
Sr. P4 User Advocate

What barriers currently prevent the wider adoption of generative AI in your industry?

"It appears to be largely unethical given that most of it is trained on content that was scraped illegally (at worst) or without consent (at best). It replaces creative workers with technology built by taking their work, which is not really a respectful way to treat those people who have contributed so much to our work and our culture."

Lead Programmer

"While this is definitely a problem, it has been encouraging to see a larger variety of open-weights models with more transparent data on their training sets. I've also been working with some of our team to support studios who want to use specific artists' work to fine-tune models, while tracking exactly which assets are used in training to allow proper attribution to the artists and their work when that model is used."

Jase Lindgren
Sr. P4 User Advocate

Continued from Previous Page

"I'd say generally quality. We use AI heavily to speed up prototyping, but ship with no AI content in our games."

Response from Executive in Gaming

"One of the key barriers to the wider adoption of generative AI in game development is the current gap between AI-generated content and production-ready assets. While AI can now generate concepts and textures quickly, converting those results into high-quality, game-ready materials or 3D models still requires manual cleanup or technical work. If generative AI tools can improve their ability to create usable materials and models directly compatible with engines like Unreal, it would dramatically accelerate full game development. At that point, I believe the true competition in the industry will shift from technical implementation to innovation and creativity."

Lead Programmer

"AI generated assets are always an approximation of what we want but never perfectly/exactly what we imagine. But I'm really curious to see if some tools will integrate AI in order to assist us in the creation process (generates some shapes from prompt in order to have a base and remodel it, or an AI which can automate some process like generating shapes following splines, etc..). It can save time for small team or solo dev like me who are not expert in making 2D/3D assets, but we have to create them."

Response from Executive in Gaming

"Currently, the biggest hurdle for AI in indie film VFX with green screens is the lack of a dedicated all-in-one software. I'm forced to juggle multiple programs to achieve the desired results. A single, purpose-built AI tool for entire movies would streamline the entire VFX process, making it significantly more efficient and accessible."

3D Stereographer

Final Thoughts

The increasing adoption of generative AI tools and game technologies across diverse industries signifies an evolution in their capability to address various business demands and use cases. Game development, historically characterized by the need for interactive and engaging experiences, has spurred the growth of robust game engines and complementary tools. These technologies now transcend traditional boundaries, finding relevance in industries where consumers increasingly expect dynamic interactions, seamless data integration, and immersive experiences.

Our report has highlighted the dual nature of these technological advancements. On one hand, they deliver substantial benefits, including streamlined workflows, reduced manual effort, and lower barriers to entry for new creators. On the other hand, we cannot overlook the challenges they create for organizations. Questions around ethics, the risk of homogenized content, and concerns over maintaining quality standards remain at the forefront as these technologies continue to evolve.

Looking toward 2026, it is clear that organizations capable of adopting game technologies and generative AI while establishing robust, scalable workflows will position themselves at the forefront of innovation. These companies will be better equipped to adapt to industry shifts, harnessing this technology's potential to enhance both efficiency and creativity.

As game technology continues to develop and reshape production pipelines across industries, we remain committed to tracking these developments and providing insights that help teams navigate this rapidly changing landscape. We look forward to seeing how creators leverage game technology to transform their industries, solve complex business challenges, and break new ground in their respective fields.

About Perforce

perforce

The best-run DevOps teams in the world choose Perforce. Powered by advanced technology, including powerful AI that takes you from AI ambition to real results, the Perforce suite is purpose-built to handle complexity, maintain speed without compromise, and ensure end-to-end integrity across your DevOps toolchain. With a global footprint spanning more than 80 countries and including over 75% of the Fortune 100, Perforce is the trusted partner for innovation.

Harness the power of AI and accelerate your technology delivery without shortcuts. Build, scale, and innovate with Perforce—where efficiency meets intelligence.

About Perforce P4

perforce P4 perforce P4 One

When Git-based and legacy tools hit their limits, Perforce P4 keeps delivering. Our version control platform handles what others simply can't—from massive game assets to repositories spanning petabytes of data. As the industry standard for gaming, media & entertainment, and semiconductor fields, P4 is trusted by technical leaders who need a solution that scales.

P4 One is a free version control client tailored for art teams or anyone new to version control. If you're already using Perforce P4, P4 One provides an intuitive interface for your collaborators who don't need all the controls of P4V. If you're not using P4, P4 One lets you version files locally. It can handle large binaries and project sizes that can break other version control systems. And when your team's ready to scale, just connect to a P4 server. Designers and artists love how P4 One's file browser and integrated 3D viewport fit into their workflows, while directors and managers love the improved performance and team efficiency it delivers.

Try P4 Free ▶ Try P4 One ▶

About JetBrains

JETBRAINS

JetBrains game development solutions empower studios around the world to build games faster and with fewer bugs. Boosting code quality and streamlining development pipelines, JetBrains tools ensure fast delivery to market. Companies like Tencent, Ubisoft, Epic Games, Unity, and others rely on JetBrains game development solutions to optimize their workflows, maintain robust codebases, and bring innovative games to players more efficiently.

Rider

JetBrains Rider is one of the most loved IDEs among game developers. It's popular both among indies and in AAA studios, bringing value and speeding up the game creation process. Rider covers top game engines, helps you drive gameplay and shader development, increases your productivity with JetBrains AI, and integrates with JetBrains' CI/CD solution, TeamCity. Other JetBrains IDEs, like IntelliJ IDEA, PyCharm, CLion, and WebStorm, are also widely used by game developers.

Download Rider ▶

TeamCity

TeamCity is one of the most popular CI/CD tools for game development. It integrates seamlessly with major game development tools like Unity, Unreal Engine, and Perforce, ensuring your projects run smoothly and efficiently. With TeamCity, you can establish a complete pipeline for building, testing, and releasing your games, no matter which tools you rely on in your production workflow.

Get Started with TeamCity ▶

Methodology

Target Population And Sampling Method

This year's survey collected data from practitioners who work with or are part of their company's or institution's development, design, or management team. The survey was conducted online from February 13th to May 8th, 2025, and respondents were gathered through marketing channels affiliated with Perforce or JetBrains.

Questionnaire

Promotion for the survey was done via email lists, social media, in-person at GDC 2025, and various partners. The sample was collected from countries across the globe including Europe, the Middle East, Africa, the Asia-Pacific region, and the Americas. Given the channels of promotion, 59% of the respondents were based in North America, with the remaining percentage of respondents scattered variously across the globe. Given the sample's nature, this data is likely limited to organizations and institutions familiar with game technologies such as Unreal Engine, Unity, Perforce P4, and JetBrains TeamCity.

Reporting And Classification

In this report, indie game developers (or indies) refer to individuals, small teams, or midsize game studios who typically finance their projects through crowdfunding or direct investments. AAA game development studios (or AAAs) refer to major game publishers and the large teams they employ. Classification as an 'Indie' or 'AAA' was made by the survey respondent through a user-selected field. The terms EMEA, APAC, and LATAM are also used in this report, and denote groups of respondents that designated their company headquarters as being located within Europe, the Middle East, and Africa (EMEA), Asia-Pacific regions (APAC), or Latin American (LATAM) countries respectively. North America or NA, refers to groups of respondents with company headquarters located in the United States or Canada. All reported stats and their percentages have been rounded to the nearest whole Number.