PM Intern Challenge: Cloudflare Workers for Gaming **By : Nicole Chui**

On the mission to build a better Internet, Cloudflare Workers puts security, speed, and versatility first for developers. With Cloudflare Workers expanding to the game industry, game developers can focus on delivering high-quality, personalized user experiences by having the power to identify their target users at the edge. While this new initiative is set in motion, a big part of launching the very best product to game developers and building a large group of core users would be to maintain a growth mindset. To win the market, not only do game developers need to be well-aware about the benefits of serverless architecture to be a core user, but also capture users' hearts and remove the frictions that slow developers down.

Plans to learn about the market and its needs

To efficiently and effectively learn more about the market, we will first come up with an observation and then apply the **inductive reasoning method** to perform research exploring the observation.

1) The product team will set out to talk to current video game developers about their challenges, uncertainties, and annoyances throughout the whole development process. These game developers can be student developers, developers from small or mid-size gaming firms, or publishers from large-size game studios. Interviewing gamers themselves will allow us to understand their gaming experiences, everything from the initial download or update process to their playing experiences.

2) As we interview both game developers and gamers, we should begin to observe a pattern of certain pain points which can be categorized to pinpoint what issue should be tackled first.

3) We will formulate a theory based on our observations and conversations with stakeholders. It's important to consider that at this early stage of product, we may have misidentified a pain-point or misunderstood the market. Therefore, building a Minimum Viable Product (MVP) with the gathered qualitative and quantitative data would accelerate the team towards informed feedback, giving us the potential to keep improving Cloudflare Workers for Gaming.

Valuable Product Changes or Additions

Putting together our user stories from the interviews will help us prioritize features that would be *essential, really want, and nice to have.* In this section, we will tackle the essentials to create our MVP. As we move along the development process, the team will continue to conduct user interviews. That way we can build the most effective product that addresses the essentials in the least amount of time.

Before introducing valuable changes and additions, providing a few demos using a provided Cloudflare Workers SDK and documentations around how Cloudflare Workers can solve typical game development problems such as scaling of servers to support more gamers on a reliable network would help kick-off the developers' implementations.

Speed and Security: When the developer calls the worker function, the specified code segment is wrapped in a V8 processing engine which speeds up the run time and adds lots of security benefits. Developer should not worry about potential slowdown if the game can be multi-player. To speed up the process of forming game teams and interacting with teammates, Cloudflare Workers for Gaming can create a feature that saves each player's status in terms of position and behavior on the shared distributed cache. That way, the multiplayer game experience can be synchronized and smoother as the server scalability is increased.

As for security, developers should easily be able to apply custom security rules and filtering logic. Similar to how code suggestions on an IDE like Eclipse work, having a pop-up security suggestion in which Cloudflare Workers detect and prevent security defects such as DDoS attacks during the game development phases can help mitigate unnecessary requests to the cache.

Reduce infrastructure costs : To reduce latency during the game play and overall costs for the firm in the long-run, we want to shift more request handlings to the edge. Most importantly, allowing more arbitrary sub-requests and computation can help developers predict what type of turn-based or real-time event handling would occur. Doing so can shrink the amount of time it takes for the developers to debug or implement functions to effectively handle these requests. Most importantly, it will allow game developers to focus on what they are best at, which brings us to our next point, personalization.
Personalization: End-developers want to quickly and safely deploy their code to users so that they can identify users and better personalize users' experiences at the edge. To attract more gamers, implementing a cache of game data at the edge based on the gamers' location or locality of the HTTPS requests will make the gamers' gaming experience locally interesting and fitting to them. Features like translating the interface to the desirable language or adding game elements that resemble with the users' interests can really amplify the users' capabilities.

Methods for improving the quality of offering before release

Once we've iterated the MVP, it is time to get early feedback from a diverse group of game developers through alpha and beta testing. However, AB testing would mean one group has the original version while the other group has the new version, and this would make it more difficult than it should be to measure KPIs based on the roll out of new features. Therefore, **closed beta testing** for the four main product additions listed above should be carried out. A population of at least 10 different game developer groups will first be asked to develop a multi-player game that takes consideration of user personalization. The large group will then be split into two smaller groups which involves group one to utilize Cloudflare Workers for Gaming and group two to just use Cloudflare Workers. From this testing, we want to focus on the overall functionality and results of using Cloudflare Workers for Gaming. Also, we want to take note of any user challenges or technical issues that arise.

Goals to measure the success of what we build

A **weekly metric** can be suitable for understanding how well Cloudflare Workers for Gaming is performing. Here are some **key points** to measure the success :
→ When it comes to detecting security defects during game development, how many potential cyber attacks are prevented? What is the usage cycle of security suggestions like?
→ How fast and easy was it for developers who used Workers for Gaming to utilize the Workers function of effectively handling event and request handlings?
→ How many more users did developers who used the Workers for Gaming attract compared to developers who didn't use the platform?

Risks which might lead to its failure

With the goal of building the "next big thing" for how game developers work, it comes with possible risks, which may require a revitalized product roadmap. Considering **both technical and market risks** is crucial to achieve "the next big thing" for the gaming industry. On the technical side, expanding personalization features that allows many different integrations for gamers may lead to more complex and unpredictable security flaws. Another technical risk is the Workers Edge implementation. Because adding more servers to accelerate edge computing can be costly, the chance of low usage of this feature may lead to a business deficit. As for the market risk, to prevent any sunk costs, requiring developers to pay for the user data storage may be a possibility, which can drive core users away. Furthermore, monetizing this new Cloudflare Workers platform during its initial release may be a challenge. Last but not least, with other existing game development platforms like Microsoft's Azure Gaming and AWS Lambda, being prepared for a risk of pricing competition and knowing how to gain more core users at a stable business monetary rate would be key to winning the market. Ultimately, it's about the team keeping a growth-mindset.