**Demiurge Usability Test**

Thomas Gilchrist

Date

**Introduction**

Demiurge is a third-person bullet hell game, set in a science fiction world. The player must explore the planet they have crash-landed on, using their energy shield to reflect the projectiles of the planet’s inhabitants, while also returning fire with their chargeable weapon.

One of the developers conducted a usability test to identify problems with the game’s combat system, using two methodologies and utilizing online surveys and evaluation forms to capture user responses.

**Executive Summary**

The developer conducted the test in two parts. First, three experts conducted an on-site heuristic evaluation in the studio, recording their findings in an evaluation document assessing the general usability of the game.

After this test had been performed, a group of users were given the game to play at home. After a short period of playing the game alone, the users were then asked to complete a short online survey to examine their experience with the usability of the game.

**Methodology**

**Heuristic Evaluation**

The first usability test performed was a heuristic evaluation carried out by three experts. The experts were given the game to play and a set of heuristics by which to assess the game.

**Details**

The following heuristics were used in the evaluation:

* Burden on Player: How much time and effort the player needs to spend interacting with the interface. This can be an indicator of how intuitive the combat system is.
* Feedback for Player: If the game provides some form of feedback to the player, to aid in interaction and immersion.
* Help and Documentation: How well is the game's tutorial implemented and how effective is it in aiding the player learn the game.
* Status and Score: The ways in which the game provides the player with an indication of important information or progress.
* Gameplay and Story Integration: How well was the game's story tied to, and expressed through, the gameplay?
* Navigation

**Controls**

None of the experts had played the game until this point. Each expert was given the game to play for ten minutes before starting their evaluation, which helped to ensure that all of them had a basic understanding of the game before beginning to evaluate. In addition to this, they received no outside tutorial or assistance with the game, meaning that their assessment of the intuitiveness of the combat system was not altered due to prior knowledge of it.

Each expert used the same computer and controller (a mouse and keyboard) to prevent any controller differences from changing their perceptions of the game's usability.

**Recording**

Each expert noted their findings in the provided evaluation document. It was not mandatory to fill out all the sections of the document, only those where the expert identified issues or felt it was important to note an observation.

**Sample**

Heuristics taken from following paper:

Heather Desurvire and Charlotte Wiberg. 2009. Game Usability Heuristics (PLAY) for Evaluating and Designing Better Games: The Next Iteration. In *Proceedings of the 3d International Conference on Online Communities and Social Computing: Held as Part of HCI International 2009*(OCSC '09), A. Ant Ozok and Panayiotis Zaphiris (Eds.). Springer-Verlag, Berlin, Heidelberg, 557-566. DOI=http://dx.doi.org.ezproxy.falmouth.ac.uk/10.1007/978-3-642-02774-1\_60

**Survey**

In addition to the evaluation, a survey was given to a group of users after they had played the game. The survey included ten questions using a 5-point score system that aimed to examine the usability of the game, particularly the combat system.

The survey contained the following questions.

**Details**

1. How intuitive were the game's controls?
2. How clear were the game's objectives?
3. How responsive did you find the character?
4. How easy was it to aim?
5. How clear was the status of your character?
6. How often did you use the shield to reflect projectiles?
7. How engaged did you feel while playing the game?
8. How visually clear was the game during combat?
9. How you enjoyable did you find the combat?
10. How likely would you be to recommend this game to a friend?

**Controls**

The participants were given the game to play for ten minutes, without further instruction, before being given the survey to complete.

**Recording**

The scoring system of the survey used a five-point scale - Not at All, Not Very, Unsure, Somewhat, Completely - to give the user enough options to encompass their thoughts but also allow quantitative data to be gathered easily.

**Sample**

**Results**

**Heuristics**

Burden on Player:

Generally few issues were found in this criteria, although one expert noted that the player was sometimes hindered by problems with the interface, citing the crosshair getting stuck on terrain as an example.

This was quite an important concern for the game, as the crosshair hampering the player’s ability to shoot could severely impact the combat system, which is the core of the game’s mechanics. However, as the expert noted, the problem was not frequent, and as only one expert encountered the problem, this was probably not the most pressing problem found. It also suggests that the player is able to complete the game successfully, even if the cursor has some issues, so the impact on the player should be quite small, although frustration at the interface could be a concern.

Feedback for Player:

Several experts noted that the feedback in combat was not very satisfying as the audio and visual effects were limited. One expert also pointed out that the player’s charge bar was ambiguous as to what it was showing and that they were unsure what it was or why it was changing.

While the audio effects are limited and could be improved, there are several different sounds which allow the player to tell what has happened (shot, shot deflected, etc), however there is no such variety of visual effects. Because of this, the visual feedback for the combat system may be the more important aspect to focus on. Different visual effects to indicate a projectile hitting the player would help to eliminate confusion over when they were hit.

Additionally, the lack of label on the charge bar causing confusion could be a problem either with the feedback or the tutorial, as information about the mechanics should be made apparent to the player. However, the use of a simple label such as “weapon charge” could clarify the purpose of the bar, even if the player still had to rely on the tutorial to know why it changed.

Help and Documentation:

All three experts raised concerns over the game’s tutorial system (signposts on the ground that the player can walk up to and read). It was noted that there was nothing forcing the player to read the signs or anything to stop them from walking past without reading them at all, which could easily lead to the player skipping the tutorial without meaning to. This was reinforced by one of the experts not realising that the signposts were interactive and simply ignoring them.

This is a critical usability issue and appears to be a large oversight in the design of the tutorial. The ability for the player to unintentionally skip the tutorial could have a massive negative impact on their experience playing the game, as they may easily become frustrated, causing them to stop playing. The most obvious alternative to this would be to implement a controls menu screen which would allow the player to view the controls at any point in the game, removing the dependency on finding the tutorial at the right time.

Additionally, it was a point of concern that the tutorial, even when read, did not explain that reflecting projectiles charged the player’s weapon, which is a core mechanic in the game. This is a more minor issue as the game is still playable without this knowledge, and the design of the game makes it highly likely that the player will discover this for themselves, potentially even adding to the experience by allowing them to find new mechanics.

Status and Score:

The lack of progress indication was a common issue, as the game does not provide any form of objective or direction indication. Despite this, one expert found the NPC characters throughout the level to be enough indication of direction. This is interesting as the NPC character’s were originally designed for that exact purpose – in addition to furthering the story – however it seems that due to only one of the experts finding the NPCs helpful, the implementation could have been better. Placing them less out of the way could have forced the player to interact with them, confirming that they were travelling in the right direction. Despite this however, the concern is overall not critical, as the linear level design will eventually lead players to the end of the level, as long as they keep moving forward.

A larger concern raised was that enemies did not have a health bar to display their status, which could leave the player confused or frustrated in combat. This is another design oversight that could leave the players unsure of the effect their actions are having, possibly resulting in a feeling of incompetence or annoyance which would reduce their enjoyment of the game. Simple health bars over enemy heads could alleviate this problem, although they could clutter the screen in crowded situations. Enemy models that change visually based on the damage done to them could be a better solution because of this.

Gameplay and Story Integration:

The separation of the game’s story and gameplay was a large issue here. One expert noted that the NPC character who delivered the story was easily missed and there was nothing preventing the player from ignoring them while another pointed out that the gameplay is entirely independent of the story and that some form of interactivity between the villain the and the player in the gameplay could have helped to fix this.

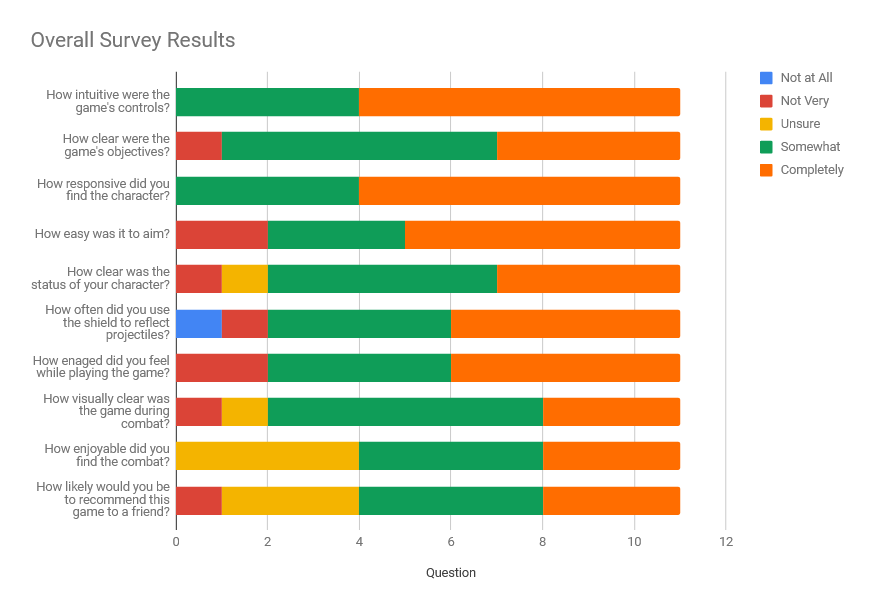
The lack of interconnectivity between mechanics and story mentioned by the expert is one of the bigger usability problems in the game. Without any way for the player’s actions to impact the story, they lose their sense of agency, effectively reducing the story to meaningless exposition. An effective and fairly simple way to connect these two elements would have been to implement the villain of the story as an enemy character in a boss fight. This not only creates an actual sense of threat to the player - as the villain can now damage and potentially kill them – but it also allows the player to overcome that threat in a tangible way, thereby gaining agency within the story.

However, one expert did portray the story in a positive light, saying that the ability to ignore the story meant it did not distract from the gameplay, and that the placement of the NPC throughout the level allowed the player to naturally follow the storyline as they progressed through the level.

Navigation:

The camera was the main point of concern regarding navigation with experts noting that the lack of camera acceleration/deceleration, as well as lack of an orientation reset function, left the navigation feeling rough and unpolished.

Although this is a fairly fundamental part of the game, the issues identified here do not seem to be too severe, as neither of them prevent the player from completing the game. Despite this, small ease of use features such as the camera reset could allow the player to spend more time focusing on the combat and less time worrying about moving the camera, which in turn could lead to more successful and therefore satisfying gameplay.

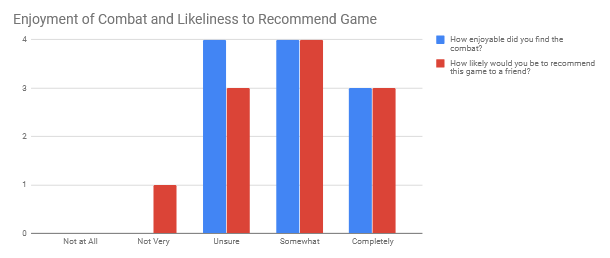
**Survey**

\*Totals chart\*

Surprisingly, despite the number of key usability issues identified during the heuristic evaluation, the survey returned mostly positive results, with a mean score of 4.15. This suggest that overall, the usability issues did not prevent the users from experiencing the game in a generally positive way. There were also a low proportion of ‘Unsure’ answers, which shows that the users were generally clear on what the questions were asking them.

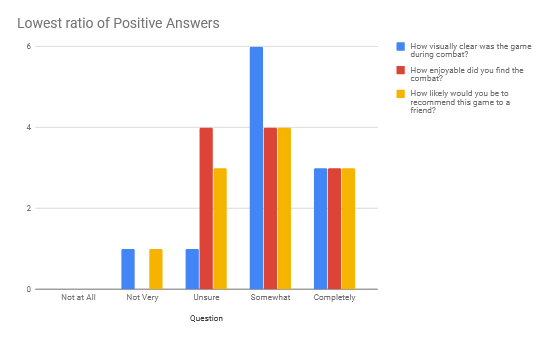
\*Chart of 3 clarity questions\*

Despite the high number of positive results, there are still several areas in which lower results are noticeable. It is interesting that one area that received several low scores was the clarity of the interface. The implication that the game lacks clear objectives and feedback is supported by the heuristic evaluation, where experts noted the lack of guidance as well as poor visual feedback during combat.

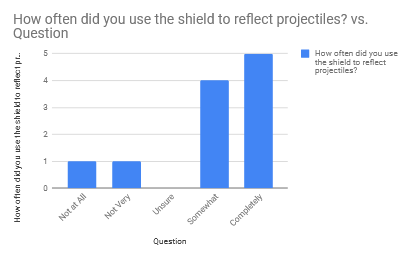


The survey also showed that the majority of ‘Unsure’ answers occurred in the two questions, “Enjoyment of Combat” and “Likeliness to Recommend Game”. This could show that these questions were too broad and vague for the users to feel comfortable answering directly, however there is also the possibility – when compared to the mostly positive results in other sections – that the usability issues identified in the heuristic evaluation lowered the player’s enjoyment without them knowing exactly why. While this could also be a result of the survey’s limited questions preventing the users from articulating what lowered their enjoyment, the use of ‘Unsure’ suggests that the lack of enjoyment was not caused by large, easily identifiable issues, but rather a compounding of small usability problems.

These results also indicate that the likeliness to recommend the game is directly tied to the amount of enjoyment the user experienced whilst playing, as the high correlation between the number of users who enjoyed the game and the number who recommend it suggests a link, although it is not possible to ascertain this for certain, as the survey was performed anonymously.



In addition, comparing those results with the visual clarity of the game – the question with the third lowest scores – it appears that the visual clarity and likelihood of recommendation may also be linked. This seems highly probably, as lack of informative visual feedback and cluttered or confusing visuals during combat could lead to players performing badly, in turn decreasing their enjoyment of the game. This is strongly supported by one of the experts noting the ambiguity of the charge bar, and another noting the lack of visual feedback, both components that could lead to frustration or boredom.



It is also worth noting the amount of users who employed the shield to reflect projectiles. Although only two users returned low results, even this small proportion of the study could be cause for concern, as the use of the shield is a core mechanic, not just an added ability for variety. The fact that one user did not use the shield at all suggests that there was insufficient instruction to show the user how to use it, a possibility which is confirmed by the general consensus in the heuristic evaluation that the game’s tutorial was lacking. It was also specifically noted that the tutorial signs fail to note that the shield can be used to reflect, which would explain the user who did not use it at all. As a core mechanic around which the game was balanced, it is definitely a critical problem if users are unsure how to use it.

**Recommendations**

Add a controls menu: Confusion over core mechanics and the controls needed to use them was a common problem in both tests, showing that the game’s tutorial was not sufficient. Although improving the tutorial would be ideal, the easiest method to ensure the user can always understand the controls – not just at the start of the game – would be to allow the player to check the controls from a game menu.

Add more visual feedback to combat: The lack of variety in the visual feedback during combat was noted by one of the experts and the visual clarity of the game received fairly low scores. It is important for a game focused on combat to make that combat both enjoyable and easy to understand and interact with. Useful visual feedback such as effects when the player or an enemy is damaged could help to make the combat more interesting and also feel more impactful. In addition to this, adding health bars to enemies is a simple addition that would greatly improve the player’s ability to understand combat situations and reduce frustration.

Add a Boss Fight: The story is completely separate from the gameplay and the player has absolutely no agency, which was a major issue identified by the experts. Adding a boss fight would be a fairly simple implementation – as the game already supports combat and AI enemies - which would not only allow the player to directly interact with the main villain of the story, but would add a physical threat to the player, rather than threats that are purely narrative based.

**Conclusion**