# Understanding Extended Testing Feedback: Positioning Platforms as a Key Factor in Independent Game Development

Xinge Tong

King's College London, United Kingdom

## Abstract

The independent ("indie") game is a common category of video games, referring generally to those that are developed by individuals or small teams. When creating new games, most developers recruit a testing team made up of users/gamers who are not in the immediate design team and generate feedback about the game. The main objective of this study is to explore a qualitative way for categorising and filtering online reviews through social media platforms to help indie developers process user feedback efficiently during the extended game testing phase. This research adopts a qualitative methodology to develop in-depth and high-quality results based on case studies of *Manifold Garden* (William Chyr Studio, 2019) and *No Man's Sky* (Hello Games, 2016). It includes qualitative content analysis based on Grabarczyk and Aarseth's (2018) ontological meta-model (2018). A comparative investigation is also used to evaluate two key media platforms: YouTube and Steam. The results indicate that Steam users' reviews focused on fundamental aspects of the game operation and game mechanics. In contrast, reviews on YouTube were related to the visual performance of games. The researcher observed an understanding gap between reviewers and developers, which means not all reviewers' advice had been accepted. In conclusion, indie developers could consider platform types when categorising and targeting user feedback.

## Keywords

Indie games; extended game testing; platform types; user feedback.

Press Start 2022 | Volume 8 | Issue 2
ISSN: 2055-8198
URL: http://press-start.gla.ac.uk

## Introduction

Independent ("indie") game development plays a pivotal role in both the entertainment industry and popular culture. The term "indie game" can be loosely defined as a game produced by individuals or small studios. According to Garda and Grabarczyk (2016), an independent game embodies a multitude of independence parameters, including financial independence, creative independence, and publishing independence. Based on this description, the term "indie game" can be used when referring to any game that meets at least one of these three conditions (Garda & Grabarczyk, 2016). Individuals may thus create an indie game provided they have the relevant education, skills, and cultural context (Ruffino, 2018), even if they also obtain some financial support from larger publishers or distributors (McKeown, 2018). Similarly, Newhouse (2014) and Ruffino (2018) argue that a game can be defined as indie if it expresses the personality of the individual developer and exhibits a significant degree of freedom.

A contentious issue is whether indie developers have absolute control over the development of their games. From developers' perspective, it has previously been observed that their decisions undoubtedly influence virtual worlds (Bartle, 2003), for they create the game. Indie games, in particular, provide developers with an opportunity to express their personal design style with significant freedom (Ruffino, 2018). However, surveys such as the one conducted by Fulton (2002) have shown that although developers will consider the players' preferences by using psychological theories, they typically rely on "intuitive theories of what they perceive gamers want" as a component of the user evaluation (p. 1).

Regarding the impact of online responses from various participants, developers need to invite outside individuals to evaluate their games from different angles (Ash, 2010). For example, an increasingly popular strategy amongst indie studios—like William Chyr Studio, the makers of *Manifold Garden* (2019)—involves an open design process and releasing both alpha and beta versions of a game to players to obtain real-time feedback. Questions have been raised about how indie developers can evaluate player suggestions by identifying who the players are and the community platforms they use, to balance what users want with the developers' initial design objectives. While some research has been carried out on the design processes of indie developers (Garda, 2014; Guevara-Villalobos, 2011), the mechanisms by which indie developers collect user ideas and feedback to improve their game has not been adequately established and understood.

Therefore, this article seeks to outline a method for indie developers to categorise and deal with player feedback on social media platforms, thereby addressing the above gap within games user research. Specifically, this article examines how two indie developers, William

Chyr Studio and Hello Games, analysed and evaluated feedback from users and how they applied this feedback to further iterations of their games. To explore the possibility of developing a more efficient method by which video game developers can analyse feedback, this paper also surveys the literature on extended game testing, game user research, and platform studies to develop a critical review of existing salient research. Moreover, this research uses a qualitative case study approach to investigate players' involvement and influence during the extended game testing phase of *Manifold Garden* (hereafter *MG*) and *No Man's Sky* (Hello Games, 2016; hereafter *NMS*) on YouTube and Steam. The overall results of the study focus on three key themes: users' verbal expressions, platform types, and games' improvements. Finally, based on the results, discussion is offered around which factors should be preferentially considered by developers within the independent game development feedback framework.

## Literature Review

### Extended Game Testing

Within this paper, the term "extended game testing" is used as a loose expression for the testing phase to take into account the frequent uncertainties in indie game development. The term is used to refer to both formal testing systems, including alpha and beta testing phases, as well as the continued feedback loop between developers and players after launch. In theory, game testing can be defined as a "quality control process" (Bates, 2004, as cited in Sagi & Silvestrini, 2017, p. 2) although there are many aspects particular to game development that test this definition. Recent studies have shown that developers often invite users to partake in alpha and beta testing during the early phases of development to report errors (Bécares et al., 2017). In online game spaces, testers and enthusiasts on social media platforms (e.g., Twitter, YouTube) are unpaid and often classified as voluntary rather than material labour (Briziarelli, 2016). Terranova (2012) therefore named these testers "free labourers" (p. 33).

Ruffino (2018) noted that the independent character of indie developers is shown by the multitude of methods they use to handle various problems. Martin and Deuze (2009) further describe these differences as a new work management. Specifically, some indie game developers are beginning to provide alpha and beta versions of their games to the public to access earlier feedback and to develop a more open design process. Thominet (2018) argued that indie developers can use this strategy to collect user feedback and even fight larger companies. This strategy can be defined as "open development": a "user-centered design practice where a developer publicly distributes an incomplete game and iterates on it while gathering feedback" (Thominet, 2018, p. 1). The players provide exciting insights for indie developers about "breaking the game" and help generate better final designs (Briziarelli, 2016,

p. 251). According to Briziarelli (2016), "breaking the game" is a feeling of doing something beyond the developer's expectations and finding bugs that creators had missed.

Furthermore, a detailed data examination of digital game platforms by Chambers et al. (2005) showed that two inherent challenges pertaining to the period in which a complete game is released online arise: whether there is enough budget or other human resources and whether the game meets players' expectations. It was observed that independent developers might often either extend their research and development periods (Kerr, 2019) or engage in uploading repair patches to mitigate the pressure of releasing games within the fixed release window (Bycer, 2016). The latter strategy, therefore, could also be seen as a kind of extended game test in which developers can improve the game based on real players' feedback.

## Game User Research

Although game testing is a fundamental part of the development cycle, it is important to recognise that not all player feedback is equally useful. Traube et al. (2017) argued that game testing is valuable because it generates "market penetration and customer feedback" (p. 163). Extended game testing improves the usefulness of feedback and builds up relationships between developers and existing and potential players.

However, Bartle (2003) found that most players do not "truly understand game design" (p. 111) and their knowledge is based only on personal experience. Thus, users may be critical of a game design due to their predetermined ideas of what a game "should" look like instead of evaluating the game as is (Consalvo & Begy, 2015, p. 20). As a result, the original intentions of developers may be ignored or misunderstood, which can negatively impact game development. Given that games need to please their players, if a situation arises where players' and developers' opinions conflict, the popularity of the game could be jeopardised. For example, Mcallister and Long (2018) offered a player-focused concept for both game developers and games user researchers to better design user experience (UX) maturity scales for video games in their study of the Games User Research (GUR) Vault and the GUR YouTube channel. Moreover, there is some evidence to suggest that a game, as a design production, inevitably reflects a sense of human need (Salen & Zimmerman, 2003, p. 5), and includes social interaction (Barr et al., 2007). If a game does not resonate with players, it likely will not be commercially successful. Briziarelli (2016) challenged some of these conclusions, however, arguing that as the number of game mechanics have increased, testing creative media products has become more effective in terms of balancing entertainment and designer objectives. Based on this situation, it is important for developers to understand the different types of user approaches to the extended game testing phase to decide if they should compromise to incorporate user feedback or not.

Much of the current literature on media production and video games pays particular attention to audience and its impact. Audience members utilise multiple means to communicate, and they hold different levels of attachment to media products (Livingstone, 2004). An audience can assert its authority by contributing reviews that criticise, support, or discuss a particular game, and in theory, these conversations build up the dialogue and culture surrounding the game based on interactions between content producers and readers (Burwell & Miller, 2016). Baym (2018) and Dunne (2016) found that game reviews play a role in game participation models. Orji et al. (2014) and Ruffino (2018) used the term "digital interventions" to refer to this behaviour. According to Orji et al., player suggestions may interfere with the developers' vision and decision-making process, based on considering player-centred game design.

In the field of video games, game developers enrich games before publishing them based on fan mail and online forum feedback (Švelch, 2019). Livingston (2018) showed that the performance of post-launch games can provide authentic data on the game's performance to researchers and developers. Research has also assisted in developing a detailed qualitative analysis method, called "Review Analysis Methodology" (RVA) for game reviews (Livingston, 2018). Online users can contribute to the development of media productions by creating fan media or communicating with creators to offer enthusiasm and experience. However, Bartle (2003) stated that although players may voice novel opinions on games, developers have found it highly challenging to produce compromises that are acceptable for all stakeholders. In this respect, although the determination of improving video games have not weakened, reviewers and their words should be treated with caution.

## Social Media and User Feedback

If the specific type of user and particular members of an audience are important factors in understanding game feedback, the choice of platforms on which extended testing is conducted must also be considered a relevant factor. The term "platform" encompasses both hardware and software systems and, according to Arsenault (2017), each platform is a portion of a "business ecosystem" (p. 22). Jones and Thiruvathukal (2012) illustrated that social media platforms are cultural and social phenomena as much as technological ones. Specifically, social media platforms provide the audience with extensive flexibility regarding space and time for their participation (Baym, 2018). Reviews will be posted by users and constitute a social community space for online audiences (Miller, 2012). In studies by Apperley (2011, p. 94) and Consalvo and Begy (2015, p. 10), reviews allow both users and audiences to consider a broad range of engagement and, further, to discuss these on several platforms concurrently. Developers are potentially better suited to make creative and business decisions about

improvements based on their understanding of such reviews (Hurley, 2008). Indie developers tend to favour an open testing process using videos and blog posts to share detailed design information with a range of users (Movel, 2012). Because of this, an analysis of video game feedback on various online platforms is useful for understanding indie design processes.

This impact is further exemplified in studies examining prominent game communication platforms such as Steam, a video game distribution platform. There are a number of game testing tasks on Steam that users can participate in; the community also helps developers collect player feedback in the indirect way. Recently, a large amount of research exploring Steam has focused on player satisfaction, social networks, and user reviews. Blackburn et al.'s (2014) research identified several player types in social networks in the Steam community, generating a quantitative analysis of player profiles to identify the traits exemplified by so-called "cheaters." A recent study by Lin et al. (2019) examined player reviews on the Steam platform with results that suggest that both positive and negative reviews are helpful for developers. This demonstrates that the Steam platform is a suitable milieu in which to examine player reviews. These studies have yet to move beyond the limited confines of the Steam platform, however. In order to conduct a comparative analysis, an alternative platform is also required.

At least two further social media platforms are available to game researchers for the purposes of evaluating user feedback: YouTube and Twitch. Deng et al. (2015) demonstrated that Twitch is a successful live streaming video platform. However, YouTube presents greater value for research purposes based on its higher volume of subscribers and greater popularity. YouTube is a video-sharing platform for "user-generated and commercially-produced content" (Gillespie, 2010, p. 348). Benkler (2007) and Bruns (2008) argued that YouTube encourages the appearance of professional, creative, and contemporary online reviews. These characteristics may explain why YouTube offers an appropriate platform for testing video games in a practical context. In addition, Gandolfi (2019) reported that YouTube gaming channels were based on Twitch, with the addition of a comments tool and official forums, compensating for the lack of live chat functionality for players who wish to share their insights. As Burgess and Green (2009) noted, the YouTube platform acts as a mediator in the relationship between video game producers and their audience. In summary, Steam and YouTube occupy powerful positions for game reception and development as platforms through which users can articulate their opinions about the games they play.

## Methods

The case studies of *MG* and *NMS* were used to investigate the influence of user reviews on game development during the extended testing

phase. Reviews were sourced from two community platforms: Steam and YouTube. This research contributes to studying user community evaluation and feedback testing for indie developers.

## Hypothesis

An important aspect of evaluating the impact of user reviews is measuring the way they can affect game performance. Three dimensions can be analysed for cross-correlations: (1) games, (2) platforms, and (3) characters (see Figure 1). As discussed in the literature review, there is a potential relationship between user reviews and platforms on which they are posted. Moreover, there is an occasionally perceived partial conflict between user reviews and game development ideas. Hence, this study hypothesised that the influence of user reviews on developer changes differs based on the platform on which those reviews are posted.

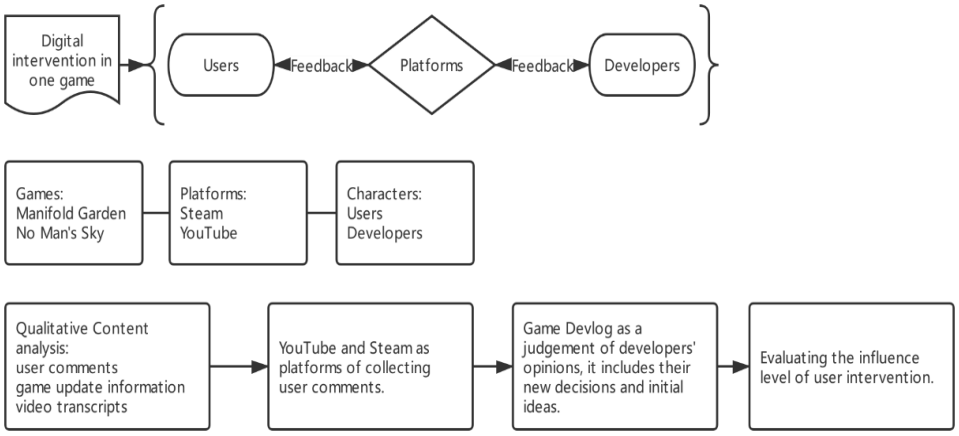


Figure 1. Conceptual framework.

## Sample

### Manifold Garden

*MG* is an indie video game developed by William Chyr and released in October 2020. Chyr disclosed his open development process on YouTube, Steam, and Twitch, which has driven community engagement. In an interview with Rainer Sigl in 2015, Chyr said that an open design process is helpful for developers to test ideas in the early stage and to link players with current problems (Sigl, 2015). Acknowledging the challenges associated with an overabundance of suggestions or feedback, Chyr employs some means of evaluating reviews (Sigl, 2015, para. 4). In this sense, the fundamental question is how Chyr selects "useful" user reviews.

### No Man's Sky

*NMS* is a video game developed by Hello Games and published in 2016 for Windows, PlayStation, and Xbox. Some argue that *NMS* is not a typical indie game because of its higher price and acceptance of financial

aid from Sony. However, Fuchs (2016) argues that *NMS* is "an indie game with AAA ambitions" (p. 1). Furthermore, as was pointed out in the introduction of this paper, some indie developers may obtain financial support from outsiders (McKeown, 2018). *NMS* was independently developed and published by a small British game studio and will thus be considered an indie game in this study.

Unlike the open development process mentioned above, the developers challenged the boundary between the release and testing phases. Švelch (2019) reported that Hello Games prefers to use the term "update" instead of "patch" for the multiple changes it has made to the game since its release, supporting a belief in the model of "games as a service" (Williams, 2018). *NMS*'s developers have published over 40 updates to address six significant problems from 2016 to 2019. Lu et al. (2020, p. 17) found that the updates to *NMS*, such as the "Survival and Challenge" mode could potentially have a positive effect on players. Before the game released, Hello Games engaged with their audience in an energetic way and made many promises to the fans. However, once the game was delivered and did not look anything like the trailers, users expressed their disappointment (Lu et al., 2020). While it could be argued that an initial release cannot be expected to meet all users' expectations and that versions should naturally be revised and refined over time, this discrepancy between player expectations, developer promises, and the game's reception demonstrates that the ways developers respond to and make changes based on user feedback is important to consider.

## Data Collection

In this study, I extracted all reviews of *MG* (from May 16, 2017 to July 1, 2019) and *NMS* (from October 10, 2016 to July 1, 2019) from Steam and YouTube. I collected reviews for these games, filtering out the ones containing no words (reviews with random characters and emoticons) as they do not provide valuable information and can be easily ignored by developers. To collect data from Steam, I developed a custom-written crawler using Python and Steam API and then ran it for 6 hours. Following this, I began collecting reviews with the following tags: "username," "products in account," "reviews," "recommended/not recommended," "hours on record," "publishing time," "reviews," "helpful/not helpful," and "funny." To collect data from YouTube, YouTube Review Scraper was used to collect data with tags and store them in an Excel document.

Next, official update information was collected to evaluate the direction of the games' development and the developers' opinions. The development videos and update information were collected, and all textual data were normalised using qualitative data analysis software (NVivo 12). In-person participants were not required for this research and all information was gathered from publicly available online platforms. In terms of data protection, I removed all personally

identifying information to keep the data anonymous, minimising potential harm.

## Research Protocol

This research employed a targeted approach towards content analysis, beginning with selecting common words and particularised syntax. The textual materials from both reviewers and developers were separated into different areas, including syntactical, propositional, and thematic units. This was necessary to determine and separate user feedback and the concomitant developer responses. Throughout the extended testing phase, data was gathered from different users at various posted time points.

The next stage of the research involved normalisation of the data using the relevant classification framework and qualitative indicators. For this study, the classification of game versions was based on an adaptation of the ontological meta-model proposed by Grabarczyk and Aarseth (2018, 2019), which includes four main layers and twelve sub-layers. According to Grabarczyk and Aarseth, this model reports on special expressions for game categories by observing and comparing the different mechanisms within individual games. In their research, the physical layer has been used to describe the physical basis of a game, such as a console (platform layers), gamepad (hardware interface layer), and set of physical actions (behavioural layer; Grabarczyk & Aarseth, 2018). Following this, the structural layer refers to several abstract aspects of a game, including code (computational layer), game mechanics (mechanical layer), and economic structure (economical layer; Grabarczyk & Aarseth, 2018). The communicational layer encompasses the information transfer between a game and players, such as aesthetics (presentational layer), narrative (semantic layer), and other non-diegetic information (interface layer; Grabarczyk & Aarseth, 2018). The last layer, the mental layer, is generally understood to mean the mental feeling of players when playing the game, such as game experience (phenomenal layer), game understanding (conceptual layer), and interaction with other players (social layer; Grabarczyk & Aarseth, 2018).

Finally, to identify the games' improvements, the following search parameters were used: fixed, upgraded, focused, added, and recommended. These parameters were reported by the official update log, which allowed direct reconstruction of the ways in which the developer shaped the game upon receiving user feedback, allowing evaluation of what had changed and what had not changed. In this study, I assume that once the extent of changes is known, a qualitative assessment of how the developer processes feedback can be made.

# Results

## Data Collection Results

A total of 276 reviews of *MG* and 28,149 reviews of *NMS* were collected from YouTube. Steam yielded 55 reviews of *MG* and 118,098 reviews of *NMS*. Considering the number of samples in each group, my strategy was to use 200 samples—100 reviews about *NMS* (50 from YouTube and 50 from Steam) and 100 reviews about *MG* (50 from YouTube and 50 from Steam). These samples were gathered from multiple sources at various time points and covered numerous researchable contents. Here, the regulations of data reduction were based on the official metrics, such as the number of "like," "dislike," "recommended," and "not recommended" responses to reduce the potential for personal bias, as well as avoid data overload. For example, the reviews with the highest number of "like" and "dislike" were selected in this study.

Update information regarding *MG* (from May 16, 2016 to July 1, 2019) and *NMS* (from November 27, 2016 to July 1, 2019) was extracted. In total, *NMS* published a total of seven major update notes, including 86 sub-changes, on its official website. For *MG*, 18 videos were published by William Chyr with the name "Dev Update" on YouTube. Following visual analysis of these videos, it was necessary to extract and check the transcripts to generate textual data. To generate an exhaustive sample, all 18 video transcripts with all 66 reviews written by William Chyr were included. Together, by examining games' improvements, 25 updated game versions (18 for *MG* and 7 for *NMS*) and their improvements were identified.

## Users' Verbal Expressions

The problems in *MG* mainly existed in its communication layers, while the primary problem in *NMS* was in its structural layer, specifically in the mechanical layer. For *MG*, data from the word frequency analysis identified the term "story" as being the most common. In Figure 2, word frequency analysis includes "story" (2.01 weighted percentage), "exploration" (1.12 weighted percentage), "puzzles" (1.12 weighted percentage), and "gravity" (0.89 weighted percentage). One unanticipated finding was that although 44% of respondents maintained that the game would be devoid of meaningful content without storytelling, one of the participants mentioned that an involving narrative hindered their ability to concentrate on the game. For *NMS*, more than 68% of reviewers reported that the game mechanics required improvement (see Figure 3). The data showed that 59% of respondents referenced the absence of virtual objects, as compared with 10% who noted the persistent lack of multiplayer pattern, which allows multiple players to play together, within the game (see Figure 3). Figure 4 gives a detailed calculation of the recommendations regarding virtual facilities, such as "planets" (4.23 weighted percentage), "space" (1.85 weighted

percentage), "ships" (1.76 weighted percentage), and "base" (1.41 weighted percentage).


Figure 2. Word cloud reviews regarding game mechanic improvements about *MG*.

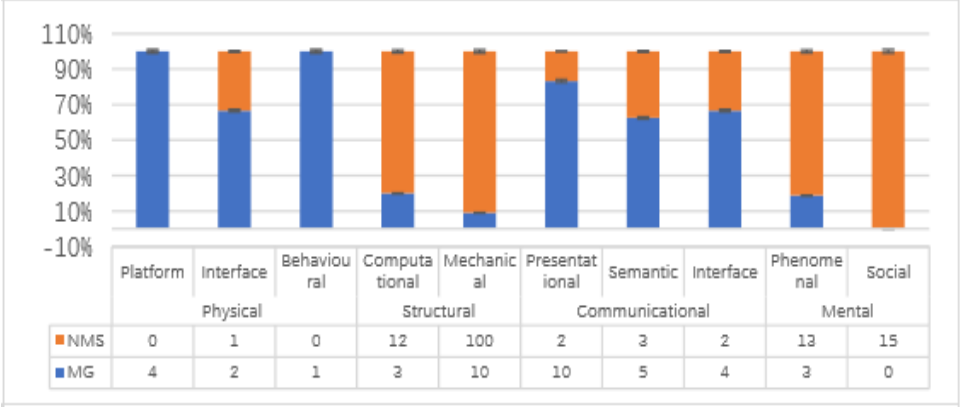


Figure 3. Overview of the suggestions about *MG* and *NMS*.

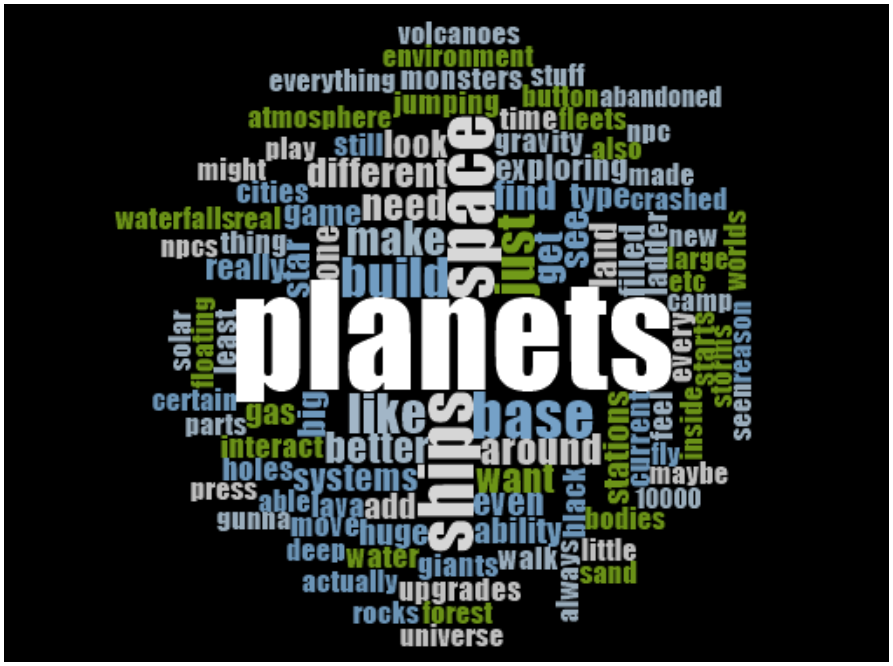


Figure 4. Word cloud reviews regarding game mechanic improvements about *NMS*.

## Platform Types

There is a disparity in the number, range, and frequency of game issues discussed on YouTube and Steam. The data displayed in Figure 5 and 6 indicates that there were only four separate problem-types reflected on Steam, with these being mainly related to internal coding and hardware issues. According to one player,

> After reading the minimum req's I was sure I could play this on my all in one. Well, like everyone else, the game wouldn't load. I was thinking maybe I would be able to play it on my desktop, nope. If players with gtx 1080's are having issues, then I will wait for this game to go on sale, after I drop more money to update my system.

Another player writes: "Nice work! I'd like to see a VR version as well."

However, on YouTube, six distinct issues arose, five of which accounted for about 15% of the comments selected for consideration in this study (i.e., computational layer, platform layer, presentational layer, and interface layer). These issues were more subjective and concerned elements such as narrative, visual weaknesses, and audio glitches. According to one player,

> Hello Games should add: Volcanoes that erupt Hurricanes Tornadoes Lightning and thunder storms Big waves or huge waves like Interstellar Shooting stars / comets crashing on the planets Advanced civilizations on planets Huge pyramids Drones that can help find resources or see other parts of the planet

> without traveling to it Waterfalls Artificial islands UFO phenomenons [*sic*] and spying Satellites Supernovas Keep up the good work.]"

A second player writes:

> It looks way better than launch only thing its missing now is combat. add in the battles to protect your own home or base and then add in space battles, add in a way to protect them in multiplayer and in campaign have a story campaign that involves combat as an element then you have what i think the game was meant to be.

For a third player, "The button images don't really fit the style of manifold garden imo. They need to be more simplistic."

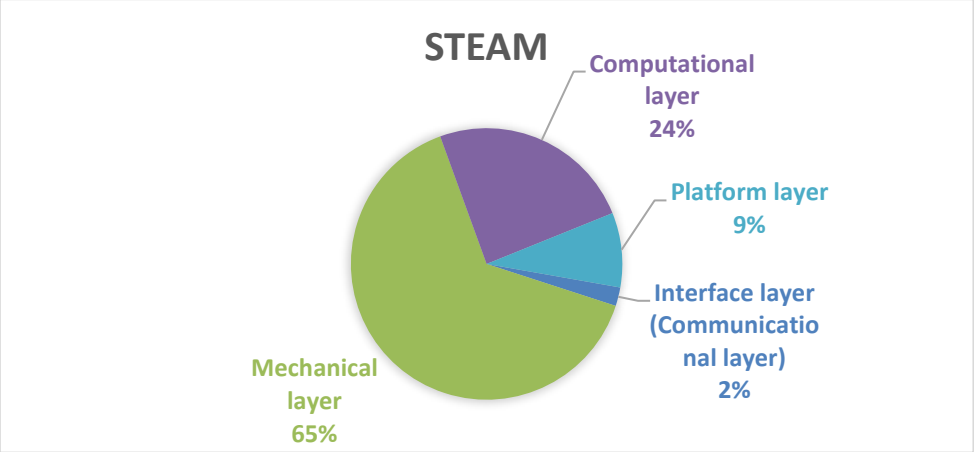


Figure 5. *MG* and *NMS*'s problems as reflected on the Steam platform.

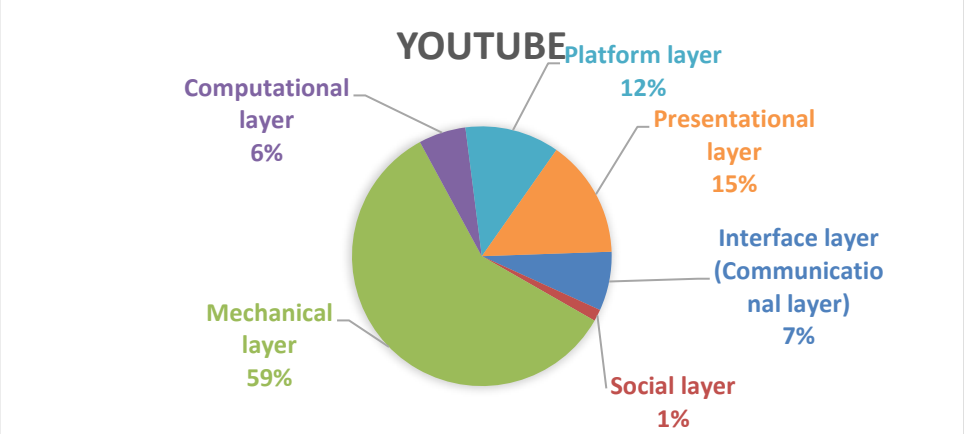


Figure 6. *MG* and *NMS*'s problems as reflected on the YouTube platform.

## Games' Improvements

The adoption rate for player suggestions at Hello Games was higher than the adoption rate for player suggestions demonstrated by William Chyr Studio. Closer analysis of Table 1 shows that Hello Games resolved most of the issues raised and made extensive modifications. As shown in

Table 1, William Chyr Studio also successfully responded to problems, but generally made a greater number of modifications in relation to aesthetic selections. Most of the rejected suggestions were those that opposed the initial design ideas at William Chyr Studios, particularly where these suggestions related to narrative exposition, gameplay patterns, and VR versions. In contrast, Hello Games demonstrated a high uptake rate in terms of adopting improvement suggestions made by players (about 96%). Despite suggestions initially being disregarded by the development team in the early stages of the game's creation, Hello Games added a number of new features, including third-person views, voice chat, and story. These additions are likely to offer a better gaming experience to users.

| | | | Program objective-MG | Program objective-NMS | Seen by MG Users | | Seen by NMS Users | | Seen by MG Developer | | Seen by NMS Developer | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Layer** | Platform | Linux | × | × | ++ | | | | | --- | | |
| | | Mac | × | × | + | | | | | ----- | | |
| | | PS4 | √ | √ | + | | | | ++++ | | ++ | |
| | Interface (Hardware) | Demo | √ | × | +++ | | | | +++ | | | |
| | | VR version | × | √ | ++ | | + | | | ----- | + | |
| | Behavioural | Hardware bugs | × | × | + | | ++++ | | + | | ++ | -- |
| **Structural Layer** | Computational | Crashes, bugs | × | × | | | +++ | | | | ++++ | |
| | Mechanical | 3rd person view | × | × | | | ++ | | | | + | |
| | | Various gameplay patterns | √ | √ | ++++ | | +++++ | | | ----- | ++++ | |
| | | Tracker | √ | × | ++ | | ++ | | ++ | | + | |
| | | Vehicles, Ships | × | √ | | | +++++ | | | | +++++ | |
| | | Planets | × | √ | | | ++++ | | | | +++++ | |
| | | Plants | × | √ | | | +++ | | | | ++ | |
| | | NPCs | × | √ | | | +++++ | | | | ++ | |
| | | Materials | × | √ | | | ++++ | | | | + | |
| | | Bases | × | √ | | | ++++ | | | | +++ | |
| | | Gaming Devices (scanner, etc.) | × | √ | | | +++ | | | | +++ | |
| | | Battles | × | √ | + | | +++ | | + | | +++ | |
| | | Characters | × | √ | | | ++ | | | | ++ | |
| | | Custom waypoints | × | √ | | | + | | | | + | |
| | | Achievements | √ | √ | ++ | | +++ | | + | | + | |
| | | Languages | √ | √ | + | | | | ++ | | + | |
| | | Goals/ Motivations | √ | √ | + | | +++ | | +++ | | +++ | |
| **Communicational Layer** | Presentational | Photo-modes | × | √ | | | ++ | | | | +++ | |
| | | UI | √ | √ | +++ | | + | | +++ | | +++ | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Reticles | √ | | +++ | | | | +++ | | | |
| | | Colours | √ | √ | +++ | | | | +++++ | | | |
| | Semantic | Story | × | × | ++++ | -- | +++ | | | ----- | + | |
| | Interface | Interactive sounds | √ | √ | ++ | | | | +++++ | | | |
| | | Music | √ | √ | ++ | | + | | +++++ | | + | |
| **Mental Layer** | Phenomenal | Gaming Spaces | √ | √ | + | | +++++ | | ++ | | ++++ | |
| | Social | Voice messages | × | × | | | + | | | | + | |
| | | Multiplayer | × | √ | | | +++++ | - | | | +++ | |

*Note: Effect level: from 1 to 5 symbols.*

Table 1. Effects matrix: Program objective, user, and developer opinions in relation to *MG* and *NMS*.

## Discussion

This study sought to propose a method, following the ontological meta-model, in order to categorize player feedback and understand what kinds of feedback is provided on which social media platforms, and to track the extent to which player feedback on those platforms has been incorporated into the development of the two indie games that serve as case studies. The assumptions were qualitatively tested investigating the hypothesis that the influence feedback has on developers varies across platforms. Overall, the results partially confirm the hypothesis.

To validate the hypothesis in a systematic way and to evaluate whether developers could use these results in a prescriptive way to inform the development of games, this research examined the main problem categories appearing on two platforms: YouTube and Steam. Comparing the issues reported on these platforms, reviews on Steam focused mainly on issues surrounding game mechanics, while those on YouTube focused on issues associated with presentation. This accords with earlier observations (Garda & Grabarczyk, 2016; Gillespie, 2010), which showed that the focuses of these two platforms are different, although the possible overlap of user groups (Miller, 2012) and interactive methods cannot be ruled out. The data illustrates advantages and disadvantages to both platforms, which makes the overall outcome highly informative, particularly compared to previous studies: Developers can benefit from both platforms at once by obtaining a more comprehensive range of suggestions.

There is a gap in the understanding between users and developers reviewing the same game; this finding echoes the work of Bartle (2003) and Consalvo and Begy (2015), who found that players' opinions do not necessarily represent the ideas that would most benefit the game. This finding supports the idea that whether developers listen to player feedback may be a question of good business sense, but it is not a question of obligation. According to William Chyr's update information and concluded effects matrix, the narrative requests by players of *MG* were rejected by the developers, as these suggestions conflicted with their view of games as art. However, the developers at Hello Games tried to keep players happy whilst attracting further attention when developing improvement designs. These results to some extent support previous findings in terms of the varying relationships between audience and market (Baym, 2018; Lu et al., 2020). *NMS* did, for example, add several storylines to the game that did not reflect the initial game proposals, echoing the results found by Hurley (2008), who noted that media developers learn how to make better choices about improving games by listening to audience voices. It is thus recommended that developers look to give more individual attention and scrutiny to feedback from players.

## Limitations and Suggestions

The limitations of this study are threefold. Firstly, the sample and case studies were selected by the researcher and are not equally distributed in across types of issues arising, making it difficult to generalise from the results. To develop a more general categorisation of player reviews for large-scale applications, additional studies are needed to analyse a wider sample of users who post feedback on social media platforms.

Secondly, Steam and YouTube are not the only game-oriented platforms. For example, both *MG* and *NMS* have official channels on Discord with multiple followers. Researchers could add Discord as a comparative platform to facilitate a more comprehensive analysis in future research.

Overall, this paper shows that digging deeper into the information influencing game development, taking both publishers and platforms into consideration, is required. One framework or theory thus cannot be expected to account for all possibilities, and these should naturally be revised and refined over time. It would be useful to repeat this study using more productive and technical methods, such as natural language processing (NLP) method, and data to strengthen the effectiveness of its conclusions and to allow for a more comprehensive application.

## Conclusion

This paper investigated user feedback on YouTube and Steam during the indie game testing phase and explored how indie developers process feedback. The findings provide an appropriate method, which follows the ontological meta-model and analyses reviews across multiple platforms, for indie developers to categorise and evaluate user feedback. An investigation of game development updates shows that developers will listen to users' opinions and make further improvements, especially where this does not detract from the developers' initial game design intentions. Platform types have clear relevance to thematic units. Comparing the content on Steam with that on YouTube showed that reviews on the former tend to focus on information about technical issues related to a particular game, while those on the latter reflect visual and auditory issues. The observed differences between Steam and YouTube in this study were important, but do not conflict. These findings contribute in several ways to an understanding of user feedback and provide a basis for developers evaluating textual reviews across platforms. In the future, a large, randomised, and controlled trial could provide more definitive evidence to support the current findings.

## Acknowledgements

I would like to express my sincere gratitude to Dr Conor McKeown, my research supervisor, for his continuous support and valuable guidance.

## References

Aarseth, E., & Grabarczyk, P. (2018). An ontological meta-model for game research. *DiGRA '18—Proceedings of the 2018 DiGRA International Conference: The Game Is the Message.* http://www.digra.org/wp-content/uploads/digital-library/DIGRA_2018_paper_247_rev.pdf

Apperley, T. (2011). *Gaming rhythms: Play and counterplay from the situated to the global*. Institute of Network Cultures.

Arsenault, D. (2017). *Super power, spoony bards, and silverware: The Super Nintendo Entertainment System*. The MIT Press.

Ash, J. (2010). Architectures of affect: Anticipating and manipulating the event in processes of videogame design and testing. *Environment and Planning D: Society and Space*, *28*(4), 653–671. https://doi.org/10.1068/d9309

Barr, P., Noble, J., & Biddle, R. (2007). Video game values: Human-computer interaction and games. *Interacting with Computers*, *19*(2), 180–195. https://doi.org/10.1016/j.intcom.2006.08.008

Bartle, R. A. (2003). *Designing virtual worlds*. New Riders.

Bates, B. (2004). *Game design* (2nd ed.). Cengage Learning PTR.

Baym, N. K. (2018). *Playing to the crowd: Musicians, audiences, and the intimate work of connection*. New York University Press.

Bécares, J. H., Valero, L. C., & Martín, P. P. G. (2017). An approach to automated videogame beta testing. *Entertainment Computing*, *18*, 79–92. https://doi.org/10.1016/j.entcom.2016.08.002

Benkler, Y. (2007). *The wealth of networks: How social production transforms markets and freedom*. Yale University Press.

Blackburn, J., Kourtellis, N., Skvoretz, J., Ripeanu, M., & Iamnitchi, A. I. (2014). Cheating in online games: A social network perspective. *ACM Transactions on Internet Technology*, *13*(3), 1–25. https://doi.org/10.1145/2602570

Briziarelli, M. (2016). Invisible play and invisible game: Video game testers or the unsung heroes of knowledge working. *TripleC: Communication, Capitalism & Critique. Open Access Journal for a Global Sustainable Information Society*, *14*(1), 249–259. https://doi.org/10.31269/triplec.v14i1.684

Bruns, A. (2008). *Blogs, Wikipedia, Second Life, and beyond: From production to produsage*. Peter Lang International Academic Publishers.

Burgess, J., & Green, J. (2009). *YouTube: Online video and participatory culture*. Polity.

Burwell, C., & Miller, T. (2016). Let's play: Exploring literacy practices in an emerging videogame paratext. *E-Learning and Digital Media*, *13*(3–4), 109–125. https://doi.org/10.1177/2042753016677858

Bycer, J. (2016) *Why you should want day one patches*. Game Developer. https://www.gamedeveloper.com/business/why-you-should-want-day-one-patches

Chambers, C., Feng, W., Sahu, S., & Saha, D. (2005). Measurement-based characterization of a collection of on-line games. *Internet Measurement Conference.* https://www.usenix.org/legacy/events/imc05/tech/full_papers/chambers/chambers.pdf

Consalvo, M., & Begy, J. (2015). *Players and their pets: Gaming communities from beta to sunset*. University of Minnesota Press.

Deng, J., Cuadrado, F., Tyson, G., & Uhlig, S. (2015). Behind the game: Exploring the Twitch streaming platform. *IEEE 14th International Workshop on Network and Systems Support for Games (NetGames*). https://doi.org/10.1109/NetGames.2015.7382994

Dunne, D. J. (2016). Paratext: The in-between of structure and play. In C. Duret & C.-M. Pons (Eds.), *Contemporary research on intertextuality in video games* (pp. 274–296). IGI Global.

Fuchs, E. (2016, September 23). *Is 'No Man's Sky' an indie game?* Fandom. https://www.fandom.com/articles/no-mans-sky-indie-game

Fulton, B. (2002). Beyond psychological theory: Getting data that improvegames. *Game Developer's Conference 2002 Proceedings*. https://studylib.net/doc/7539161/beyond-psychological-theory--getting-data-that-improves-g...

Gandolfi, E. (2019). Playing the post 9/11 on game service platforms: Premediation in The Division via Twitch.tv and Steam. *Convergence*, *25*(5–6), 826–847. https://doi.org/10.1177/1354856517741131

Garda, M. B. (2014). Nostalgia in retro game design. *Proceedings of DiGRA 2013: DeFragging Game Studies.* http://www.digra.org/wp-content/uploads/digital-library/paper_310.pdf

Garda, M. B., & Grabarczyk, P. (2016). Is every indie game independent? Towards the concept of independent game. *Game Studies*, *16*(1). http://gamestudies.org/1601/articles/gardagrabarczyk

Gillespie, T. (2010). The politics of "platforms." *New Media & Society*, *12*(3), 347–364. https://doi.org/10.1177/1461444809342738

Grabarczyk, P., & Aarseth, E. (2019). Port or conversion? An ontological framework for classifying game versions. *Proceedings of DiGRA 2019.* http://www.digra.org/wp-content/uploads/digital-library/DiGRA_2019_paper_189.pdf

Guevara-Villalobos, O. V. (2011). Cultures of independent game production: Examining the relationship between community and labour. *Proceedings of DiGRA 2011 Conference: Think Design Play.* http://www.digra.org/wp-content/uploads/digital-library/11307.08157.pdf

Hello Games. (2016). *No man's sky*. [PlayStation 4, PC, Xbox One]. Hello Games.

Hurley, C. (2008, October 16). *YouTube CEO Chad Hurley's MIPCOM keynote address* [Video]. Youtube. https://www.youtube.com/watch?v=yXMPaQQ6y4A

Jones, S. E., & Thiruvathukal, G. K. (2012). *Codename revolution: The Nintendo Wii platform*. The MIT Press.

Kerr, A. (2016). *Global games: Production, circulation and policy in the networked era*. Routledge.

Kerr, C. (2019) *Starbreeze seeking to extend reconstruction period for a third time.* Game Developer. https://www.gamedeveloper.com/business/starbreeze-seeking-to-extend-reconstruction-period-for-a-third-time

Lin, D., Bezemer, C.-P., Zou, Y., & Hassan, A. E. (2019). An empirical study of game reviews on the Steam platform. *Empirical Software Engineering*, *24*(1), 170–207. https://doi.org/10.1007/s10664-018-9627-4

Livingston, I. J. (2018). Post-launch in game user research. In A. Drachen, P. Mirza-Babaei, & L. E. Nacke (Eds.), *Game user research* (pp. 45–60). Oxford University Press.

Livingstone, S. (2004). The challenge of changing audiences: Or, what is the audience researcher to do in the age of the Internet? *European Journal of Communication*, *19*(1), 75–86. https://doi.org/10.1177/0267323104040695

Lu, C., Li, X., Nummenmaa, T., Zhang, Z., & Peltonen, J. (2020). Patches and player community perceptions: Analysis of No Man's Sky Steam reviews. *Proceedings of DiGRA 2020*. http://www.digra.org/wp-content/uploads/digital-library/DiGRA_2020_paper_433.pdf

Martin, C. B., & Deuze, M. (2009). The independent production of culture: A digital games case study. *Games and Culture*, *4*(3), 276–295. https://doi.org/10.1177/1555412009339732

McAllister, G., & Long, S. (2018). A framework for player research. In A. Drachen, P. Mirza-Babaei, & L. Nacke (Eds.), *Game user research* (pp. 117–140). Oxford University Press.

Mckeown, C. (2018). *Videogame ecologies: Interaction, aesthetics, affect* [Doctoral dissertation, University of Glasgow]. http://theses.gla.ac.uk/8878/1/2018mckeownphd.pdf

Miller, K. (2012). *Playing along: Digital games, YouTube, and virtual performance*. Oxford University Press.

Movel, M. (2012, July 11). Marketing: Using your strengths as an indie [Conference presentation]. Develop Conference Indie Day, Brighton, United Kingdom.

Newhouse, A. (2014, July 15). *Don't throw "indie" away just yet, we still need it*. GameSpot. https://www.gamespot.com/articles/dont-throw-indie-away-just-yet-we-still-need-it/1100-6421044/

O'Donnell, C. (2017). "Show me the money!": Shifting fields of capital in the global game industry. In C. B. Hart (Ed.), *The evolution and social impact of video game economics* (pp. 1–14). Lexington Books.

Orji, R., Vassileva, J., & Mandryk, R. L. (2014). Modeling the efficacy of persuasive strategies for different gamer types in serious games for health. *User Modeling and User-Adapted Interaction*, *24*, 453–498. https://doi.org/10.1007/s11257-014-9149-8

Paleo Entertainment (2009). *Merchants of Brooklyn (Drug wars)* [PC]. Paleo Entertainment.

QSR International Pty Ltd. (2018) *NVivo* (Version 12) [Computer software]. https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home

Ruffino, P. (2018). *Future gaming: Creative interventions in video game culture*. Goldsmiths Press.

Salen, K., & Zimmerman, E. (2003). *Rules of play: Game design fundamentals*. The MIT Press.

Sigl, R. (2015, November 8). *"Manifold Garden": Das unmögliche Spiel, das Gehirne verknotet* ["Manifold Garden": The impossible game that twists brains]. *DER STANDARD.* https://www.derstandard.at/story/2000025097894/manifold-garden-das-unmoegliche-spiel-das-gehirne-verknotet

Švelch, J. (2019). Resisting the perpetual update: Struggles against protocological power in video games. *New Media & Society*, *21*(7), 1594–1612. https://doi.org/10.1177/1461444819828987

Terranova, T. (2012). Free labor. In T. Scholz (Ed.), *Digital labour: The Internet as playground and factory* (pp. 46–48). Routledge.

Thominet, L. (2018). How to be open: User experience and technical communication in an emerging game development methodology. *Communication Design Quarterly*, *6*(2). https://doi.org/10.1145/3282665.3282672

Traube, D. E., Begun, S., Petering, R., & Flynn, M. L. (2017). Beta testing in social work. *Research on Social Work Practice*, *27*(2), 163–168. https://doi.org/10.1177/1049731516659142

William Chyr Studio. (2020). *Manifold garden* [PC] William Chyr Studio.

Williams, M. (2018). *No Man's Sky next is a testament to the modern era of evolving video games*. USgamer. https://www.usgamer.net/articles/no-mans-sky-next-is-a-testament-to-the-modern-era-of-evolving-video-games