

Online Community Dynamics in the Video Game Industry

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Communication between game developers and their customers, or player communities, is an important element in building customer trust, market performance, and longevity (Entertainment & Games Software Industry Profile, 2020). Unlike traditional non-interactive media (i.e., T.V. or movies) or physical products (i.e., software or clothing), online gaming exists in a collaborative and persistent online world (González-Sánchez, 2009). Thus, during initial game planning and gameplay (the service phase), customer feedback is critical to organizational success. Moreover, Teece (2019) states that customer-driven industries, such as video games, require strong capabilities in three areas: sensing (need), seizing (opportunity), and transforming (response). According to Teece (p.20):

[s]ensing is an inherently entrepreneurial set of capabilities exploring technological opportunities, probing markets, and listening to customers, along with scanning the other elements of the business ecosystem.

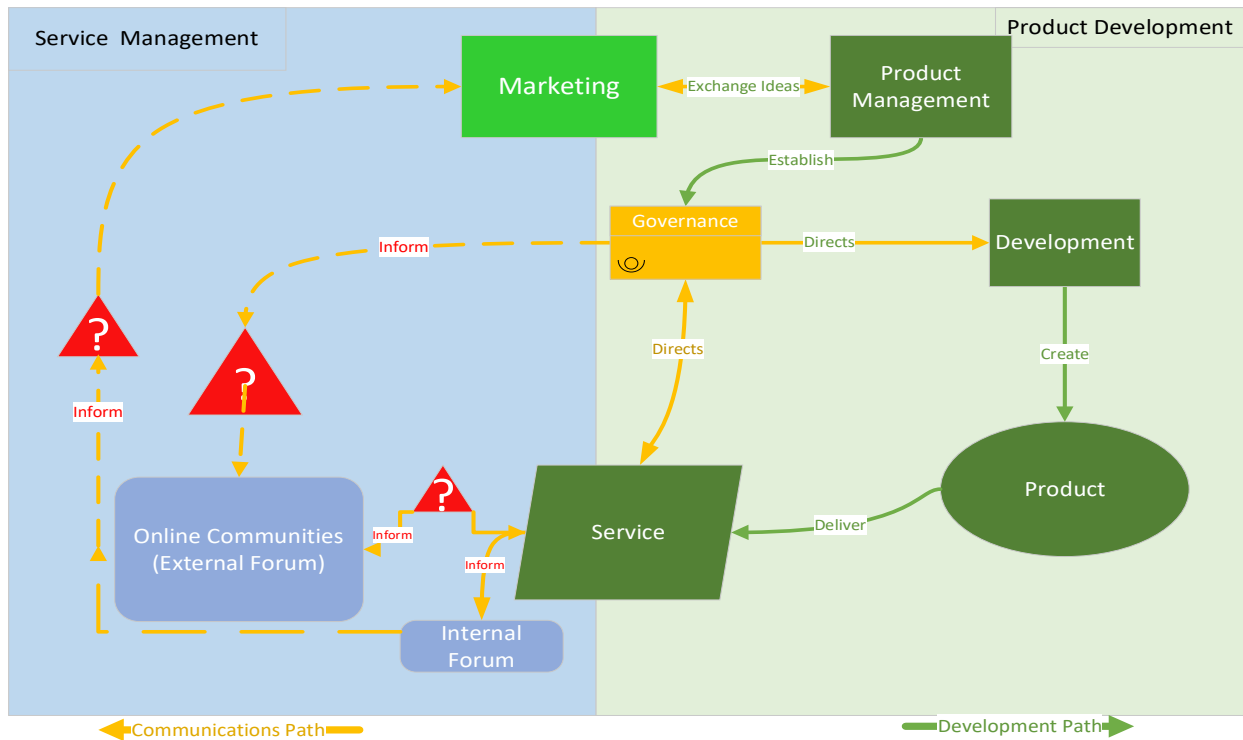
Research in the video game industry indicates that market research guides content during initial game envisioning and new product development, leaving a potential customer feedback void during the game's service operational phase. The role of traditional market analysis, used in non-interactive media, places a higher value on product over service (Zackariasson, 2006). Yet, community feedback is a vital sensing tool in long-term game success. Given this, it is important to assess what methods are employed by video game companies to incorporate community impact on the development and upgrade process.

Looking through the lens of structural theory, Fulk and Steinfield (1990) introduce the concept of viewing the larger organizational structure and the current influence patterns before determining any one component's impact. Essentially, we cannot understand an organization just

by understanding its boundaries. Organizational boundaries continually change, requiring re-examination of relationships and rules. As social networks become tightly linked with workgroup networks, research indicates the need to clarify governance in the process. (Fulk & DeSanctis, 1995, p. 344).

To do so and using the basic concepts of influence mapping (Fulk & Steinfield, 1990), I have created a theoretical map of a video game organization model, shown in Figure 1. I denote two organizational structures in this map: (a) product development (on the right) and (b) service management (on the left). Within the boundaries are what appear to be clear communication paths. On the right, the developers control the implementation and management of governance (rules) associated with the game and, on the left is an alignment of online (external) Community messaging (e.g., Twitter feeds) about the game.

Figure 1: Initial Update Process Flow Model



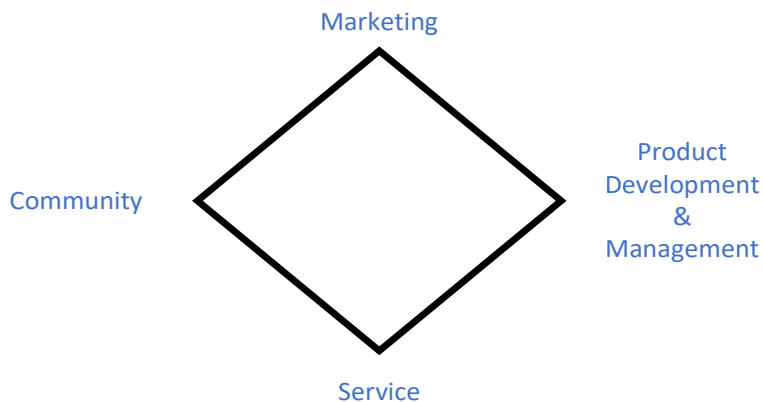
The core focus of this study is on the lifecycle of game governance within individual gaming companies. This paper focuses on a single governance issue of community impact (feedback) on game evolution. This study reviews the use of community feedback in the initial game development cycle vs. community (e.g., customer) feedback during the service cycle (revisions & upgrades) of game operation. The goal of the paper is two-fold. First, review the current approach to customer feedback and the change management processes employed in the video game industry. Second, to highlight the current state of community impact on game governance.

Literature Review

Electronic communication technologies have radically changed the way communication works within organizations. As access increases, control and information exchange lines broaden, and communications networks become more fluid (Fulk & DeSanctis, 1995, p. 2). Organizational changes are blurring the lines between internal work, communities, and external product align communities. Fulk and Flanagan (1996) describe these as "connectivity [that] provides point-to-point communications, and communality [that] links members through commonly held information " such as video game communities. These product-aligned communities are a cornerstone of the adoption and success of new products (Iyengar, 2020). Thus, well-developed communication paths between external and internal communities promote the evolution of shared knowledge (Fulk & Flanagan, 1996, p. 74). Communication pathways between communities and companies promote the growth of shared understanding. A challenge for some companies is that open communication channels often lack mediation. Mediation refers to "who might benefit from a particular set of information can be instituted by governance filters" (Fulk & Flanagan, 1996, p. 75).

Understanding the role of governance in the video game industry is central to understanding the inter-related roles community and developers play in the evolution of interactive video games. Governance is a set of processes or a 'meta-process geared toward creating, maintaining, and evolving collaborative relationships and the network as a collective actor (Fama & Jensen, 1983; Mehouachi, 2010). Governance in the video game industry is, however, still a loose term. It is understood that governance, required for orderly and sustainable play, is often narrowly defined as the game rules. That is to say, the game developer specifies the formal terms of service. Many of the basic operating rules of each game world are components of the design for the game. (Burk, 2010). This paper focuses not on the internal game governance, as Burk described, but on the business governance dynamics between the game's developers and the external communities.

In the business environment, governance is often a discussion between leadership and enforcement (or product development) (Provan, 2008). Provan further states that "[t]o define governance in the video game world we need to define the underlying network of contributors, authorities and interested parties" (p. 231). For the present study, as outlined in Figure 2, the focus is on the four communities that comprise the video game network: Marketing (who gathers the feedback), Development (who produces the product), Service (what operates online), and the Player Community (the audience). Player communities influence normative (or player) behaviors (Kraut, 2016) and game (revisions and changes) governance. This paper's focus is to explore these elements and their singular and group impact on product evolution.

Figure 2 Functional Model

Neither Burk (2010) nor Provan (2008) clarifies the governance issues within the video game industry. To understand the participants' "organizational challenges, we need a broader understanding of a video game company's general organizational and business structure. "The notion of business model has been used by strategy scholars to refer to the logic of the firm, the way it operates and how it creates value for its stakeholders" (Casadesus-Masanell & Ricart, 2009). Gennaro Cuofano (2020) describes the video game industry as part of the entertainment industry that has been operating as a product business but has moved to a digital service model (distributed and sold online) within the past few years.

Raghu Iyengar, an economics and marketing Professor at the Wharton School, outlines the value proposition for a digital multiplayer game company. Iyendar (2020) states that product-aligned communities are.

[a] treasure-trove of customer data that is accumulated behind the scenes. Through their game and subscription choices, playing habits and patterns... users transmit a steady stream of information to gaming companies about what keeps them engaged.

A scan of the U.S. Bureau of Labor catalog of business types (NAICS, 2020) points out the video game industry has a split personality. Fisk and Tansujay (1985) noted NAICS lists video games under games, arts & entertainment. In 2020, NAICS placed video game companies under two major categories: (1) games, art, and entertainment, and (2) various sub-categories of technology (software and hardware) (Entertainment & Games Software Industry Profile, 2020). Video game development is often listed under software development, whereas video game production is found under entertainment. Video game services are listed under software distribution. According to Zackariasson (2006), this sector's core differential integrates creativity into the more traditional business models.

With their technology foundation, video game companies have a more natural alignment with large product-oriented technology industries. As Burk (2010) and Zackariasson (2006) argue, creativity is an equally strong foundational element that aligns with the service-oriented games, art, and entertainment industries. Compounding the challenges to the business is the impact of balance between rapid technology change and long maintenance cycles for existing games. Burger-Helmchen (2019) noted in an interview with NY-Games (Shanghai) that "The video game industry is since, the beginning, an industry with cycles between 5 to 7 years, with the rhythm given by launch of new devices." The hybrid nature of the product and service offered raises the question of the type of business model required to maintain the necessary business/community balance needed for long-term sustainability. People have asked whether the industry should follow the technology operating models focused on product development, or are they better suited to adopt an operating model from the service industry focusing on the consumer (e.g., Fisk & Tansuhaj, 1985; Greiner, 1972; Zackarsson, 2006). Thus, product-led

business structures tend to orphan the service component, thus leaving out the player community's integration into the governance model.

The present study explores the intersection between community impact (in the form of feedback), marketing influence (product planning), and governance (company rules) regarding changes in successive versions of live (currently active) games. Understanding this intersection requires defining the structure and sources of game governance: the rules that guide development during product creation and game evolution during a game's service phase.

Primary Statement: Identifying Governance

There are few, if any, identified industry standards for video game governance. A key to understanding the impact of community feedback on product evolution in the video game industry requires first defining the live game update process. In a classic business structure, Marketing is the motivator of change for the traditional product or service. A service is, by nature, customer-driven, whereas a product is marketing-driven (Zackariasson, 2006). As noted earlier, Figure 1 describes a theoretical operational model of video game company processes and outlines the key gaps pointed out by the initial research. As a reference point, this study uses general IT industry standards to determine if there is a de facto standard among video game companies and trends in the industry.

Secondary Statement: Communication Structure

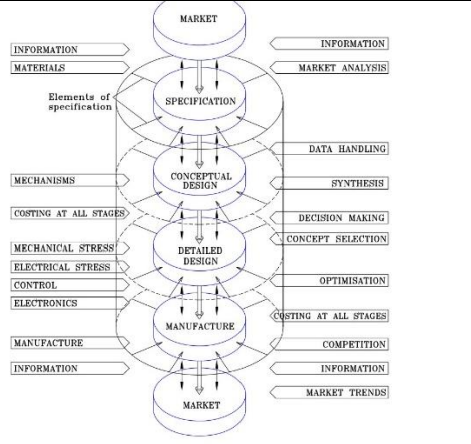
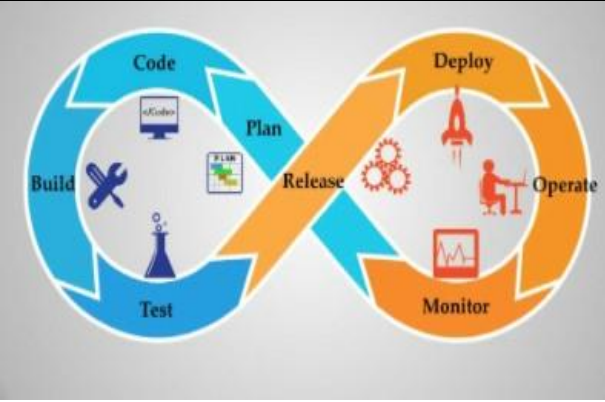
Organizational and IT development researchers have acknowledged organizational culture as playing an important role in determining virtual communities' success. One of the neglected aspects of the literature is the nature of the relationships between firms and communities. Research on communities has long focused on developing ideas and capabilities without a specific firm's hierarchical control. There are two main weaknesses in the current

literature: (1) the domains of knowledge and cognitive activities that firms should delegate to communities, in particular, user communities, are ill-defined; and (2) once the domains of knowledge are delegated, little research addresses how firms can harness or direct communities and turn it into profit. (Burger-Helmchen & Cohendet, 2011, p. 320)

Industry Standards

Video games are a unique offering containing both product and service elements (Burk, 2010; Zackariasson, 2006). Thus, there is a need for a unique combination of marketing and community feedback to guide the product development and revision (upgrade) processes. Understanding these processes' unique elements involves the comparative analysis of development methodologies and standards (Zackariasson, 2006). The video game industry is rooted in the IT standards of the mid-20th century, as represented by the Pugh model in Figure 3. The waterfall, or siloed, process development methodology describes best practices at this inception point. (Synopsys, 2020) Over the past decade, the DevOps concepts of multidisciplinary collaboration and automation have emerged within the IT industry.

Figure 3: Sample Development Models

Traditional I.T. Development Model	DevOps Feedback Process
 <p>The Total Design activity models proposed by Pugh (figure adapted from Pugh (1990))</p>	
<p>Pugh Model, 1990</p>	<p>InformationAge, April 2020</p>

This DevOps methodology "has the potential to help developers respond to rapidly changing competitive landscapes by quickly shipping customer-driven products and their updates faster while still providing a stable, reliable, and secure service." (Wallach, 2020) The need to operate in an innovative and iterative space, constantly pushing new features out, driven in part by player demands, makes the DevOps methodology a good match for game development. The "DevOps continuous delivery improves *time to market*, which is crucial in game development. It allows agile practices with *rapid consumer feedback*, again important in game development as well, ensuring the quality and continuous functional safety and security." (Marleena, 2018)

The impact of community (customer) feedback on the evolution of video games requires, as part of my considerations, some analysis of the underlying development methodologies related to the primary and secondary statements against standards in the broader Information Technology (IT) industry.

Methods

My study aims to understand the community impact, or influence, on the direction of a video game. Based on my research, I will narrow my focus to explore the processes at the intersection of the community discussion and the changes made in successive game versions. Interviewing current industry participants provides a focused qualitative view of the process and the community's impact on game changes. Traditionally, developers control the governance factors associated with the game: the cadence and content of updates. By exploring if and/or how community feedback impacts the game update process, the project can explore the interactions between developers and community feedback, identifying governance issues, and map positive/negative issues during the process.

Study Targets

The management of governance and communications in the video game industry consists of many intertwined factors. Based on my literature research, qualitative theory-building would be best applied to this study. This study uses a grounded theory interview-based approach (Charmaz, 2014). I interviewed participants that meet the active industry engagement criteria (described below) at major gaming companies (past or present, as noted in Appendix 2).

My company search criteria included companies with the following criteria: sizable financial strength, a minimum of five (5) years, and two upgrade cycles of one multiplayer game. There are a limited number of companies that can meet this criterion. Table 1 represents an initial list of potential candidate companies. Appendix 1 (Target Companies) contains a more in-depth discussion on participating companies.

Table 1 – Companies/Game References

*Game Companies Discussed in Interviews***Companies/Studios referenced**

Microsoft Xbox
ArenaNet
Deep Silver Volition
Mojang

The target population for this study included participants in Marketing, Product Development, and Service Operations, as outlined in Appendix 2 (*Interview Candidate Roles and Sample Questions*), who met the following criteria: (1) a history of employment in the industry for at least one complete game cycle (either new game development to release or one upgrade cycle of an active game); (2) permission to describe the activity within their operational unit at one or more of the target companies in the study; (3) their involvement or direct knowledge of the availability and use of customer feedback in game development, changes, or upgrades. The participants were recruited through organizations such as LinkedIn using the platform-specific messaging system and direct contact. Participants recruiting continued throughout the initial study period using a snowballing technique where each contact was asked for another connection until I have reached an adequate sampling size. The limited number of video game companies of comparable size and nature limited the target to a small set of participants who meet the criteria across a minimum of three (3) to four (4) companies (including current or past experiences).

During the interviews, I sought to clarify changes in the operating model, as described in Figure 3, experienced during the participant's career in the video game industry. The interview design did not require reference to any specific model (such as Pugh (1999) and DevOps (2020)). My goal was to draw out the update process while seeking to

establish any changes in this process over time. The purpose of this data collection method is to provide an update to my research process flow noted in Figure 1. An updated image of current operations has been created based on my findings, Figure 5.

Data collection method

Company-based participant interviews.

A qualitative sample was collected from the available audience, but no attempt was made to represent any given role statistically within the data set. The interviews included a sample size of five (5) to eight (8) subjects, including roles in Development, business leadership, User Research, Release Management, and Community Management. I conducted interviews using Zoom, phone, or other audio chat services for an average of 45 to 60 minutes per session. As shown in Appendix 4: Interview outline, I used a semi-structured open-ended approach to allow the participants to express their views without conversational constraints. Each interview was recorded and transcribed for further study. Following the Charmaz (2014) methodology, the data was encoded using an inductive set of codes to sort the data from the text and deductive codes that identify the theory. The interview transcripts were created and properly stored for all interviews to ensure coding has been done correctly.

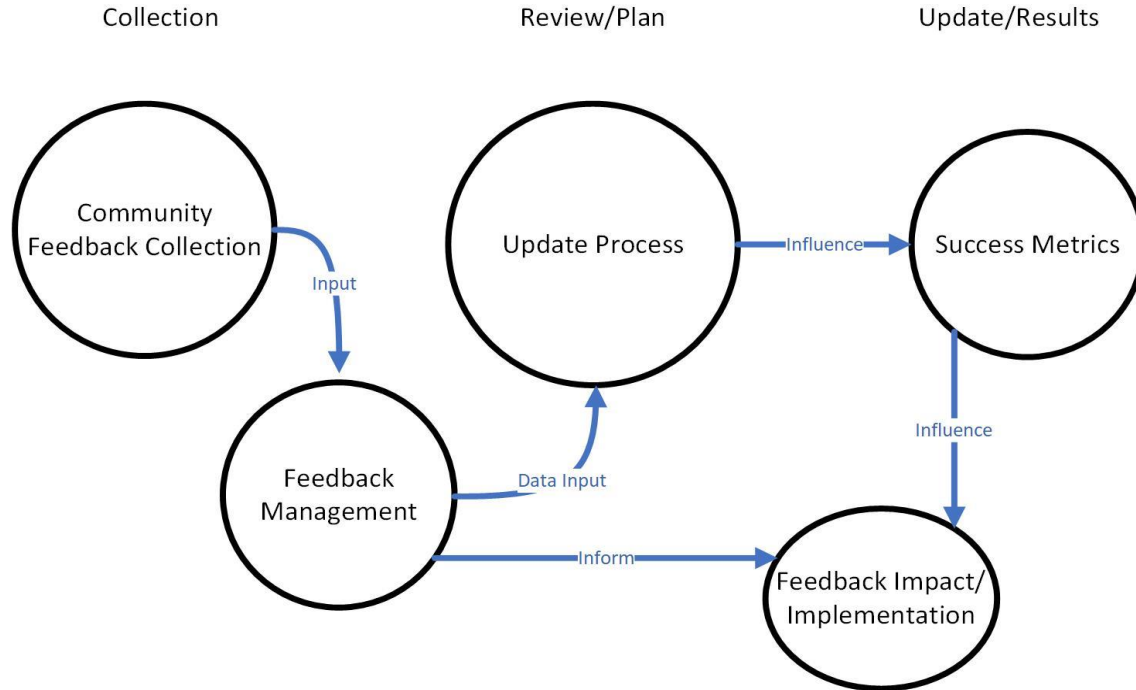
Addressing specific developer questions to align industry standards.

During the initial growth phase, the video game industry developed various in-house projects and support methods (Zackariasson, 2006, p. 9). As part of this project, a comparison is drawn between game community feedback use and traditional IT product feedback approaches (e.g., using known industry models such as Pugh or DevOps). As part of the interview, I drew the participant's focus to the functioning of the process model for game updates and releases, how this works today and how it has changed over their careers. The question structure was

designed to determine if the current process aligns more to the traditional (structured serial processes) or closer to the evolving DevOps (using continuous integration and deployment methods) models (as described in Figure 3). Participant interviews included specific process questions on feedback and change management for updates of existing (live) games. This information will help establish the current state of feedback information flow between development, service, and Community (González-Sánchez, 2009). My data aims to bring forward the governance and control factors not often seen or understood by most of the player community. I believe that this perspective can help bring to light issues relating to transparency challenges associated with video game governance.

Interview Focused Findings

One weakness in the literature is the lack of study on game evolution and the impact of community feedback on the governance of the change process. "Stated differently, the research on user communities has not addressed enough the rules, governance principles and practical behaviors through which a firm exploits the potential scale and scope advantages brought by massive communities of users." (Burger-Helmchen, 2016, 2) Exploring this gap with industry participants provides insight into the current and evolving dynamic between game producers and customers (players). As demonstrated in the process map, figure 4, the study reviews the collection of community feedback, the management of the feedback information, use in the update process, success metrics, and community feedback impact the overall update process.

Figure 4: Interview Content Mapping

Community Impact on Game Update Process

Industry study participants confirmed our earlier research that video games, unlike packaged software products, contain a vast amount of content (from the platform to the artwork) and interdependent components (including character action and levels of play) that complicate all aspects of development and maintenance. Furthermore, the lifecycle of a video game moves from the very intense (and often lengthy) game creation process to the long-term sustain/maintain mode.

As the lifecycle phase changes, the management focus, operational approach, and governance of the game change. The consensus is that a Game Roadmap¹ drives each game. At inception, the game roadmap is established by leadership, marketing, research, and production.

¹ Roadmap: the overtime work plan for a game

The game creation phase is directed by production, design, and development based on the output demands of the roadmap. The roadmap provides the cadence and high-level direction for the second phase of the operations/maintenance cycle of the game. The operating phase is managed by development or a multidisciplinary² team with guidance from multiple sources on change management. Most games are live in operational/maintenance mode for three (3) to five (5) years, with numerous upgrades and bug³ fixes pushed routinely or as needed. [O'Donnell, pg 26]

One Developer described the process as similar to flipping a switch; as soon as a game's project is done, the studio starts to think about the future titles, the team changes, and we are in maintenance mode.

In operating (or live play) mode, Massively Multiplayer Online (MMO) games focus more on the player experience than software development. One primary question we explored is why updates are so crucial to a game studio. Talking about this transition, the production manager (PM) noted that product "Improvement releases are designed to extend community engagement in the current product release (DLC⁴ or update) but are NOT strictly community-driven." A Director, Business Operations, stated that "...by making updates. I can release a game change, and it feels fresh and new. As a gamer comes back, they see there's new content, there are new challenges, it keeps them coming back, and it keeps the game fresh for them, and it buys me as a studio time to build the next game, whether that is a sequel, or a prequel, or a port from Xbox to PlayStation. Whatever it might be, it buys me time to update the already out game on the market. It gives me time to work on future production without being solely dependent on the initial launch of the game."

² Multidiscipline maybe composed of roles such as: Community Management, Production Management, Design (including art/sound), Release Management, Marketing, Development and Operations Support

³ A game bug can be anything from a small glitch to a major defect. Bugs are generally reported to development through Support tickets registered by users, testers, or researchers.

⁴ DLC=Downloadable content. This is update content created distributed online by the game publisher.

The Business Operations participant continued explaining that updates are needed based on the game roadmap as, "It would take them another three years to create a new revision or game. It's hard to keep a franchise relevant to the consumers when you can do three games in 10 years. You could lose an entire generation of gamers in that time if they become unhappy. So, updates are the baseline requirements to stay relevant and be able to run your business as a studio..." Updates are critical as "new releases are... just packed with bugs and are generally in awful shape when they came out. The roadmap accounts for routine bug fixes to correct 'on release' bugs."

All participants underscored the importance of maintaining the player audience over the game's lifecycle and into the next iteration or new game title. Thus, the operational phase is a core component that drives the studio's Return On Investment (ROI).

Throughout our industry-based interviews, the focus was on community feedback as it impacts game evolution. In the initial research, we noted and confirmed that community impact on game evolution has the most significant opportunity for influence during the update process. Thus, the interview focus narrowed the conversation to in-depth questions on the nature of community feedback, the feedback process, input utilization, and the analyzed measures of success.

Community Feedback

Retaining the audience through the entire game lifecycle means communicating and listening to the Community. The Developer, and more recently the Community Management Team, monitors the private (studio managed) and public forums and broader social media to

gather data on how things are going with the current release. Results are compared to specific changes made in an update release to improve outcomes (e.g., playtime or noted bugs).

Collecting Community Feedback

Industry interviews indicate that there is no set industry standard for collecting, reviewing, and vetting Community input. Each company appears to address specific issues with their own choice of roles depending on their desired outcome. The participants interviewed indicated that, depending on the size or structure of the company, they assign different roles to complete these tasks. Most participants agree that Developers monitored the player forums and postings in the early days of the industry. Today, participants see a trend toward more structured community management.

Developers and Community Management confirmed that defining the community's voice is the most challenging part of gathering feedback on the live game. As one Lead Developer said, "you would get horrible things, you get great things, you get all kinds of things, and it was on you as the designer or the team in general to decipher that language. And I will not lie, based on how you read it, you would sometimes make mistakes." Along the same lines, a Community Manager commented that you often dig into the issue to discern if comment A (positive) or comment B (negative) was correct. Generally, determining the voice of the community takes more than skimming the surface and counting the posts.

Participants noted that while community feedback is collected in many ways, the main collection methods are outreach (via links or direct connections) and in-game (pop-up) surveys, monitoring community forum posts, and community-based interviews conducted by research teams. A Production Manager noted that "The effort of gathering user feedback is a key component to enhancing the 'virtuous cycle' of creating a better game." Analyzing community

sentiment data is critical to carefully vetting the content. This work aims to define the root cause of a problem instead of being distracted by side effects.

Participants noted that reaching out to the community must be done carefully and structured to avoid causing disruption or concern within the player community. As a Lead Developer notes, "There were some strict guidelines. You could not spoil anything, and you couldn't say what you were working on. But if you had launched something, you could go to the community and ask, "Hey guys, what do you guys feel about this?"

Developers and Community Feedback

Though player community feedback is generally considered key to the "virtuous cycle" of creating a better game, there are noted challenges to collecting this information. The approach employed can color the relationship between the player community and the game. A lead Developer explains, "if Developers monitor the community and respond positively, the process can develop a closer connection between Developers and Community, trust in the product. If the Developers respond negatively or ignore the Community input, the outcome can sour the relationship."

Most participants felt that managing community feedback can be an undue burden on the Development Team. As noted earlier, community comments can be very harsh and often unfiltered or even misleading (on the surface). The moderator role can be a full-time job. Participants indicated that separating the Development and Community Management processes can provide a buffer and reduce tensions. The current trend amongst the larger studios is to

employ Community Managers to provide this critical interface and provide a consistent voice and presence.

Feedback Management

Data collection methods noted by study participants included outreach (external to the game) and in-game surveys, community posts, user research profiles, and Developer feedback. Each method has positive and negative aspects. Participants described the positive and negative aspects of each feedback collection method.

Currently, surveys are the most widely used feedback collection tool. On the positive side, surveys can ask people to talk rather than listen to those who want to voice an opinion. Microsoft Release Manager noted that "70% of people fill out their surveys on a [smart]phone, which is crazy because some of our surveys are 70 questions long or something like that. Not the monthly one, but some of our bigger surveys." Participants commented that "in-game is something they like to do, but not something done right now on a routine basis. There are many in-game surveys before a title launch when the team is testing the proposed release. In-game surveys also appear more at launch time but are thought to be too intrusive and difficult to manage during regular play sessions. Given the current state of the technology, participants indicated that 'in-game surveys are great if you want something like a net promoter score, or you're just trying to understand if people are happy or not happy in the game.'"

The survey collection methods were noted by all participants as used broadly. Some companies, as mentioned earlier, collect regular feedback with good results. Other participants report doing "as needed" surveys to respond to noted issues or determine the success of a recent release or update.

In addition to outreach and in-game surveys, companies seek player feedback from various social media sources, including subReddits, Discord, Twitter, and Instagram. Searching techniques often include using buzzword search – phrases or bug mentions- that have surfaced by development, research, or team members. Participants indicate that the community's voice seems to migrate to the tool that best fits the audience. Community leaders or managers often bring back issues from a variety of social media/forums. Participants agree that community management needs to monitor various sources and have excellent visibility into different tools to look for certain buzzwords. The goal is to have the ability to alert the update team if specific phrases continue to pop up or they see a bug mentioned across many different users on different social media platforms. In that case, the issue can bubble up as a top customer-reported issue.

The negative side of reviewing community posts includes listening to disparaging messages or the dangers of gathering misleading information on public forums that are often not representative of the larger player community. Participants mentioned this issue numerous times, with the Community Manager participant noting, "... the pitfalls [for] people trying to develop community programs is getting sucked thinking that that is anything other than one data point out of many that should be considered."

New data management tools can enable a broader analysis of content from public sites. A community manager participant said, "... they take all the publicly posted messages and ... process them through a machine learning algorithm that tries to determine if [the amount of] negative sentiment or positive sentiment. If somebody is happy or not..." Multiple participants noted that the use of new tools, as they mature, could open new avenues of information about players and the community at large.

A User Researcher noted that new AI tools might allow sentiment analysis to gather the community's voice in larger organizations. "So, you can see the prevalence of different keywords that are used with the brand, what have talked about online. That's probably not something you need if you're making a super indie game. But once your game gets... bigger [it might be interesting to use] ...the bigger your game gets, the more helpful something like this is. Because there's just not enough time and the day for you to read everything said online and then tried to hand concoct ways to analyze that kind of data. It can just get hard. And honestly, language processing is not perfect because it's just the check for language processing with machine learning... It is in its infancy. But at least it's something that you can use to get a temperature check on how things are going."

Information Collection Strategies

Information collection strategy has distinctly different paths: 1. Bottom-up feedback collection led by developers reviewing support logs, analyzing online discussion forums to see what is being said, and building an updated plan (reactive planning). 2. Top-down is generally implemented by a multidisciplinary team, seeking to balance the product roadmap and community feedback (demand-driven planning). A Developer-led feedback strategy is a traditional approach to gathering community feedback. The Community Manager participant commented that "... the devs would go and read Reddit, and they'd go hang out on Twitter... every dev's situation is different. If you are a small indie dev, the likelihood that you have a community manager is probably low. When teams start to grow, they can afford to add community management roles, but in general, there's a couple of people assigned to monitor the community for feedback."

Gathering feedback from the community has its challenges. The Community Manager participant mentioned, "the biggest challenge of community managing is making sure that we're able to do things that can capture the opinions of our players without relying on an [exceedingly] small sliver of the community to represent everybody. That is ...one of the traps that as you're building a community program, many Developers fall into is like they start going and hanging on Reddit. Then they think that Reddit represents anything other than the people who would go hang out on Reddit. There are tons of people who just do not ever... That is not their thing. Going and hanging out on Reddit and talking about a game, it's not something they would do."

Community feedback can come from leadership, or another management role, who notices social media content. The Release Manager noted: "you run into that situation ... that is usually when people higher up are reading Reddit and reading NeoGAF and the forums and all of those kinds of things. We get to see a lot of that coming from community managers and [other]...I like the idea of running [regular] surveys because when those topics come top-down, often they're coming from a place where somebody's looking at a very specific portion of the audience [not a cross-section of the population]." Participants commented that release management could also advocate for the community. They often see conflicts between desire (what people say online) and what can be accomplished, given the limitations of a specific release.

A primary data collection method in some larger companies is User Research. User Research collects deep research on player behaviors and interactions using a variety of techniques. In larger companies, they might run player surveys routinely (monthly) or just after game tests of releases. User Research may also conduct player interviews on specific issues when investigating their product. The user researcher interview participant commented that "...

user research, ...primary means of collecting that kind of feedback is via surveys, primarily. {we use surveys} partially because [they are] cheap to do ..., and you can also send it out to a lot of different people. [Surveys are] challenging because you need to send it to a representative sample of your players, which is not the most straightforward thing to do in games. Gears and [Microsoft] has a way of emailing survey invitations to a bunch of people that we know have played the game, say, in the last month." User Research also reaches out to multiple players: new, existing, and dormant (stopped playing) for a balanced view of the issues.

Additionally, User Research brings in new and experienced users to the lab to observe play behaviors. New users are guided and questioned – more behavioral interviews. The User Research Manager described a process in which they "... send out a survey each month to people who have played Gears of War; there are three different segments, we have people who have been playing it for a long time, people who have just started playing it and people who... I effectively just stopped playing it. Recently lapsed, they had been playing it, but they haven't played it in the last month."

The growth of social media and forum participation with online games opens new windows of opportunity to gather community feedback. More companies are using analytics; though text analysis is new, they are growing in reliability as a method for content review. When scanning and reviewing forum posts, caution is advised by all participants – always validate your findings and do not assume the loudest voice is the correct answer.

Decision-makers Impact on Feedback

Many updates, or game change decisions, are made by Designers, Studio Heads, and executives based on gut feel. A User Researcher participant said, "There's a very creative and artistic aspect to video games, but data will heavily inform them. And then there are many

Designers and Studio Heads and leaders who don't listen to that. They go with what their gut tells them, and they go with what they think needs to be done or the thing that they want to do. And often, because they are in such high positions in studios, the team will learn to work in those different models." The leadership role and influence issue was underscored by a User Research participant when they noted; if a leader makes a recommendation, the team may well accept it as a decision without asking the critical questions of " why are we doing that? What's our goal? Is there data to support this change?" Is it going to have a meaningful impact?" In larger, highly collaborative environments, decisions are often more broadly questioned. Leaders have a much more collaborative team, where people are allowed to ask questions and offer alternative ideas.

Using their own experiences as the narrative, participants have noted that the video game industry has grown over the years from rough start-ups lead by strong leaders to large studios moving toward a customer-centric environment. Leadership, guided by their experience and knowledge of the business, often do what they think is right. The team needs to ensure the community's voice and the logic of design/development both influence the game.

Community Management Strategy

A point of concern in the industry is community forum ownership or sponsorship, the appropriate platform for communities, and the general governance of the communities themselves. As this paper focuses on the impact and use of community feedback, we find this topic very interesting but, in general, beyond the scope of this paper. We did explore some of the comments that have some impact on the governance aspect of our discussion.

Company ownership of the forum allows for control (governance) of the forum and requires the company to invest in operation and management. In general, the Community Manager noted, regardless of ownership, "... you are going to get ... opinions from real, local

people online, but there's a ... rule of thumb in the community management ... called 90-9-1 rule... It says 90% of your audience will never actually engage with you, 9% of your audience will engage with you sometimes, and 1% of your audience will engage with you all the time. So, when we run the Forza Horizon Twitter account, ...some people respond to participate in threads, and we see so often that we now know them by name. We talk amongst ourselves and say, "Oh yeah, this one guy." We talk about them by name because we see them all the time.

Update Process Drivers

In most video game companies today, the Game Roadmap⁵ is a primary work management tool. Participants confirmed that roadmaps guide work units and timing for releases and updates over the game's life. Since current games live for three to five years, the roadmap provides staff allocation for routine updates. The primary focus of regular updates appears to be bug fixes noted by Developers and Support (through player support tickets) and changes to the actual play routines, characters, or environments. As mentioned earlier, many Studio Developers are often the primary drivers and managers of the update process. The evolving trend is toward multidisciplinary teams⁶ that are more common in the larger studios. Updates generally have four essential process stages: planning (Strategy), prioritization (of recommendations), development (coding), and release (test & distribute). Regardless of who and how an update is managed, it is critical that release management carefully plan the test and release process with an eye on community acceptance. This paper's community feedback impact discussion is focused on the three phases of planning, prioritization, and please aspects of the updated process.

Planning: Using Roadmaps and Release Strategies

⁵ Roadmaps help to space out the work and refresh the play regularly.

⁶ Multidiscipline maybe composed of roles such as: Community Management, Production Management, Design (including art/sound), Release Management, Marketing, Development and Operations Support

The Game Roadmap generally contains planned upgrades to keep the game fresh and engaging over the planned three (3) to five (5) years of operations before a new game or version comes online. Bug fixes and issues surface as players engage with the game. Many games are released with known issues, especially in the advanced levels of play. These gameplay issues are accounted for in the roadmap and are fixed as quickly as possible during scheduled updates. The lead developer participant commented relating to past game releases. "...the [games] system essentially was made to have a steady perspective balance towards the end of it, so it was like, let us say 0-80. Every 10 levels, you get a unique reward. What happened was that the higher levels rewards were not done because we needed to release the game, and that art wasn't done. And so, a designer at the last possible moment came in and turned it into an exponential curve. And so that was like, okay, it is an exponential curve, we have plenty of time because they cannot get there fast to get to the very top end, we can get that art in beforehand. But what is bad about that? Exponential curves are usually not good. Especially when they scale as high as ours did, to go from one or to go from 79-80 was the same as 1-79. It was like a three-year investment to go one rank. Which is absolute insanity."

In addition to roadmap planning tasks, update release planning must include reviewing proposed changes for potential adverse effects on the customer. An example mentioned by a Lead Developer describes a situation where the team wanted to 'surprise' the players with a new feature. "...When we did it, there were problems. So, you could not be proactive, you had to be reactive so that we would ship the system, and it would be quiet because essentially, it was right at the launch of an expansion, so there are all kinds of people talking about all kinds of things. Your update gets pushed around usually to the bottom... People are talking about the story; people talk about big bugs, crashing issues, whatever it was. But then, randomly, like two, three

weeks in, I am looking on the forums, and I see all of a sudden, someone's like, "Man, this system's trash."

As noted earlier, though multidisciplinary teams seem to be taking the lead, some companies continue to engage the development team to search for and vetting fixes (both bugs and game glitches). Participants notes in these cases, other resources are involved in the planning process.

Community Management, if not managed by the Development Team, will participate in the update process. In addition to a Community Manager, knowledgeable players often help manage communities that vet community-reported issues. Production and Design Managers are also described as part of the overall update process planning.

In recent years, multidisciplinary teams have added different release strategies to include processes for triage, as described in the DevOps process, as games can always be better or optimized. Since games are more escape than reality, their evolution can take many directions. For example, in some companies, we noted that User Research could influence the game direction by adding new insights from interviews, simulations, and play studies that change the gameplay during an update cycle. Analytics collected by Community Managers, User Researchers, or Marketing also bring insights and changes to the game during the update cycle.

Over time analytics have been developed to determine the relevance of community feedback for marketing and surfacing the most important updates for a given release. Though User Research often has no direct role in the roadmap development or the timing of the content release in most companies, they can provide insight into player pain points. It can also help to highlight issues based on their research. A User Researcher noted, "I know with Minecraft, User

Research works directly with the Minecraft team and leadership. In this instance, the player feedback research steers the team as part of the development process."

This first phase of planning the update is an intense cycle of identifying and validating potential tasks for a scheduled update. Feedback might be collected from various social media, including game forums (owned or independent), or collected from direct player contact (emails or messages) sent to the community manager or support team. Once assembled, the team reviews the feedback and makes recommendations about what might go into the planned update.

Prioritization: Clarifying Priority and Severity

The next phase of the update process moves from high-level planning to prioritizing and rating each recommendation's severity (of need). The community and research recommendations are reconciled with the roadmap requirements to establish a set of recommendation prioritization. Participants indicated that Production, Development, and Leadership tend to take the lead at this point in the process. They will sort each recommendation to determine if it raises to the level "must fix" based on priority and severity ratings assigned by the update team. A bug prioritized as an emergency changes the cadence and often raises to the top of the list. An Executive Producer participant commented that Producers and business leaders would work with the Development and Design to establish an initial prioritization of these recommendations.

To instill order within the process, companies use a variety of project management techniques. Some report using an Agile⁷ approach with parallel projects in motion; others prefer a serial development process based on prioritized pieces. Regardless of the project management approach, everyone uses a severity and priority system for bug fixes. Low severity becomes a

⁷ Engaging in constant collaboration with stakeholders and continuous improvement process at an increment of the project.

high priority when the community cares about it. That is, if the community voice is strong enough, it gets done. The Executive Producer also noted that the concepts of severity and priority are generally applied based on Development's estimation of what can be done (and in what order). Everybody uses some version of prioritization of work and weighting of severity (order of importance).

Update classifications help to manage the update process—severity. An example the Executive Producer gave described the case of a game that crashes (stops working). If it crashes "for 30% of the audience, this would be classified as high severity high priority zero; [if it was] a color issue would be rated as low severity, priority three, or if the game crashes on a rare occasion the rating might be high severity but low priority."

Sometimes getting to the heart of the problem is a matter of searching for it. For example, a User Researcher noted that "Fortnite's constant release of new products could produce changes even when no other action is taken. It is hard to determine if the dev team was even listening. It is hard to tell because they use different metrics: in this case, they were focused on activity, churn rate, and revenue. On the other hand, in Gears, a slow-moving game, the focus is different and easier to see if the input was acted upon."

Release Management: Considerations

In the final stage of the update process, leadership swings focus back to the Community and Release Management. The Executive Producer participant noted that the last phase of the process is testing and releasing but evangelism. All participants indicated that communicating to players, explaining why the changes were implemented is key to long-term success. It is essential to help them accept the changes or convince them to accept the update without being upset. If the

Community feels they got something they dearly wanted, they will tend to take it well and even voice their agreement even if there are still issues.

The role of Release Management is to balance roadmap change requests to accommodate community requests, bug fixes, and Development recommended changes during each update cycle. Beyond getting the updates completed, Release Management has numerous challenges to consider, from testing and timing to community acceptance. The Executive Producer commented that "ReleaseManagement manages a whole bunch of people that are involved in testing, certification, translation and globalization, and, of course, the vast...What is it 100 million different things that release management is responsible for?"

Release Scheduling and Community Acceptance

Beyond all the basic release mechanics, if a release is rushed over a weekend/holiday, it could cascade problems, including staff unavailability. The Release Manager noted that balancing release timing with environment issues is critical to a successful launch. They are essentially attempting to avoid other platform conflicts, such as not releasing on 'Patch Tuesday' (to avoid bugs and errors existing in a game for too long), then testing again after 'Patch Tuesday' and release. Release teams need to watch external situations, including political, situational, etc., that might make you pause your release. Keep issues for the community at a minimum. Then finally, it is critical to engage the community before launching an update to avoid adverse reactions. All fixes, changes, and additions should be evangelized to the community-facing team, including the community manager, producer, and testers, using all means, including social

media, to announce the release. Line up updates with community recommendations to help players understand they are being heard.

In summary, participants reported two strategic goals for game updates (1) keep the game fresh and encourage the players to return and (2) fix bugs. Good update governance will set a balance between platform and customer base drivers for each title. Core drivers for the update process are critical bug fixes that impact players and content refresh to keep the game engaging over time. Finally, Release and Community Management must ensure that updates are community tested, timing is right, and the Community is prepared for the release.

Measuring Success

Video Game companies tend to focus success metrics on return on investment (ROI) for the company. Today, ROI generally equates to dollars from sales or the monetization of playtime. Companies tend to measure improvements in the audience attitude, surveys or social media and behaviors, and improved participation.

Business goals help to balance the impact of player feedback on the update process. Participants underscore that the primary business goal is to improve the customer experience while balancing the demands of the Game Roadmap. It is critical to listen to the customer and fix issues to maintain customer satisfaction and player attention. The Production Manager noted a case in which the team reviewed research, recommended changes ..." and the Design Director said, "Okay," and then never fixed any of those things." Most participants indicated that ignoring game challenges can reduce play time and, thus, revenue. Sometimes incremental improvements are the answer (small improvements over time) to immediate issues while the larger team focuses on long-term gains.

The User Researcher underscored that it is crucial to "maintain the audience for the next release." Post-release game improvements should enhance play, so the company makes more money. Updates should keep the players longer and attract new players to keep the game going longer. Clearly define the updates, set a timeframe, and measure the completed work. Your metric will always depend on your business focus."

The business metrics are focused on ROI, whereas the community metrics will focus on the community's voice (did they get what they wanted?).

Defining Update Success Metrics

Most participants agreed that if the game is doing well in the market, it means the team is listening to the Community's voice. To continue this success, the Design Team needs data and feedback to enhance features that will extend playtime and improve player retention. Reflecting on community success metrics, the Community Manager noted that in the grand scheme of things, as a Video Game Studio, if you do things to keep the players happy and respond to player feedback, your game will sell. If you are doing right by your players, they are going to be satisfied, and they're going to stay with you and not leave your community and play on something else. If the game is not doing well in the marketplace and it is unclear what the problem is, a problem-solving or strike team is formed.⁸

Production and release management noted that the big code errors (like games crashing) are easy to track. The complicated things (like player learning time causing early leave) are hard to discover and may be surfaced by User Research. The User Research Manager noted that just tracking success metrics can be problematic. Tracking makes it very tempting to try and turn many of these issues into bugs or design change requests to them service tickets for easy

⁸ **A strike team is a virtual multi-discipline team form to investigate a specific or significant challenge.**

monitoring. If everything is turned into a service ticket and the case shows up as closed, you have an instant, but possibly misleading, metric. Most of the time, community feedback is put on PowerPoints or shared in reports at the planning meeting. The Design team may note the content and turn it into new ideas, but the connectivity to the community input is lost.

Metrics Goals

Business goals and their related metrics will change over time. Good leadership will redirect teams based on the shifting marketplace or corporate direction. So, teams use pop-up feedback surveys on features to measure response to updates and changes in direction. If the change in direction is not aligned with the player community metrics, you might not meet one or more of your primary business goals (such as retaining players); thus, your metrics dashboard will be poor (and you fail). One example noted by User Research was player learning time; these challenges are sometimes difficult to address because the changes are too fundamental to the game. The User Research explained that it just works this way, and you will lose some people. Live updates are a fixed process aimed at the largest audience segment. The goal is to make as many people happy (retain players) as possible, recognizing you cannot fix everything.

Community Feedback Impact

Reviewing and analyzing the impact of feedback is about first determining your current success rate to understand what works and what does not to improve your process over time. The Community Team monitors the Community Forums and social media to gather data on how things are going with the current release. Results are compared to specific changes made in an update release to improve products (e.g., playtime or noted bugs). They compare the community data before and after the update and allow the team to develop insights into the community

impact. Identifying and verifying the primary issues with the community will provide good data to create success metrics after release.

Community feedback helps the design team by commenting on the game and the impact of various aspects of the game composition. Community discussion allows Designers to understand how to achieve the most critical success criteria - game time. Designers are seeking insights into how to extend playtime.

Design issues raised by the player community are often discussed during update review meetings and amongst Designers, Producers, and Developers. These discussions can influence the updated roadmap plans – short or long-term. Development teams sometimes post the planned updates (fixes) for the community for feedback community feedback can then add or change the roadmap before finalizing the updated plan.

In this way, community feedback will often influence game development (or roadmap) plans. Updates (to the roadmap) focus on game evolution, but changes to the product (the life span or versions) seem to come from market research in social media, including community feedback.

The Community Team collects the voice of the community data, but the design team needs to review the root cause of a problem. The producer noted, "We have the community team that collects before and after release date. These data points, and the during the release create the success metrics.

Participants underscored the concept that it is the common goal of the studio to see all aspects of player issues and meet their needs to retain players and support the long-term ROI of the game.

Discussion Summary

Gaming Communities are an evolving force of change in the video games industry. My study has identified a trend of video game studios changing their practices toward a more inclusive multidisciplinary teaming approach to governing the update process. As update governance broadens to more roles, including Community Managers and User Research, within the company, the opportunity broadens for the inclusion of community feedback.

Research and interviews indicate a trend toward more inclusive feedback review in the game update (and refresh) process as gaming companies move from a fixed product to a service basis. In the service environment, updates maintain the long-term viability (3 to 5 years) of the product.

Process Insights

The traditional update approach (still in use in many studios), as previously shown in Figure 3, is focused on developers finding the bugs or seeing an opportunity to make a change; they make the change and push out an update. In this model, updates happen if Development and Release Management believe it is needed. This method is essentially a technology-driven (bottom-up) change management process in which community feedback has lower priority than Developer insights.

"The solution, in the broader technology industry, to this has been billed as "DevOps," a mindset in which the roles of software developers and systems operators are no longer as separate as they once were. This has changed the way that companies think about building, testing, and deploying their software, allowing them to ship updates more frequently and helping

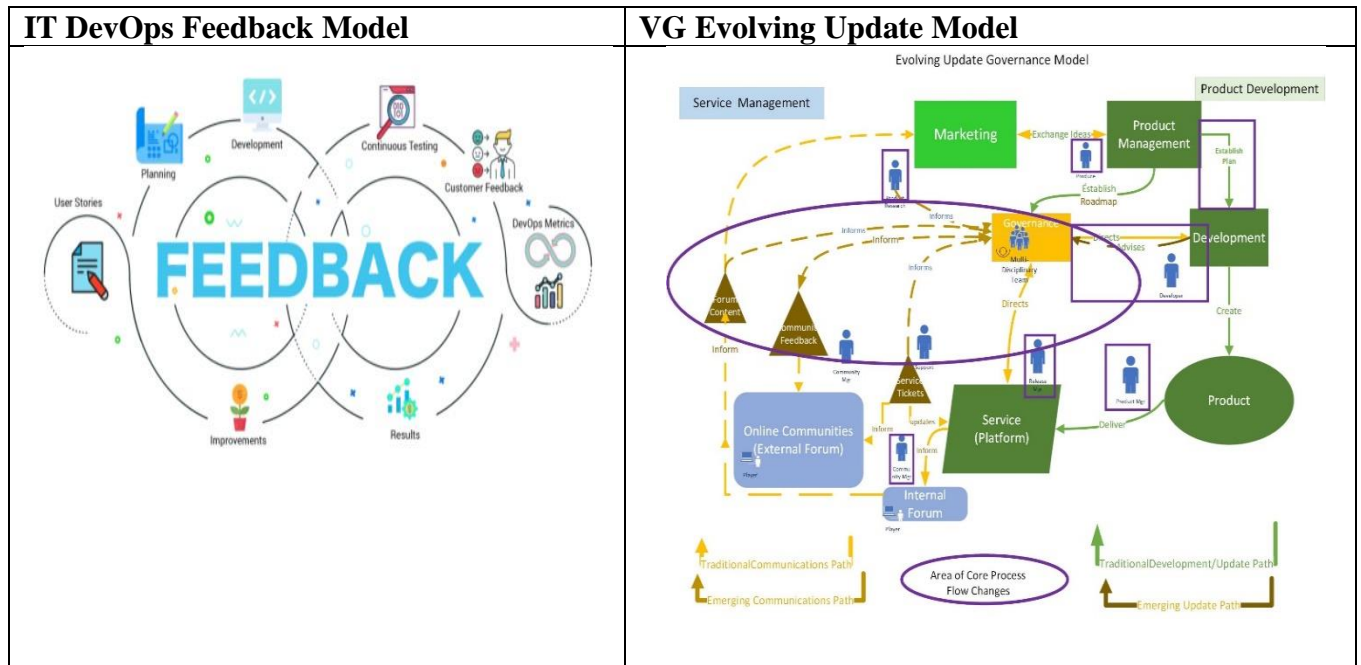
ensure reliability." (GeekWire; 8-19-2018). The migration to multidisciplinary update/review teams in the video game industry is part of the change in operating vision.

Emerging Trend: Large organizations such as Microsoft have instituted a broader (top-down) update governance model, including:

- Game Roadmaps that include staffing options for updates,
- Introducing the use of multidisciplinary teams, as shown in Figure 5 -right panel) including Community, Marketing, User Research, Design, Product Management, and Development to review/approve updates based on input from service (bugs), community (feedback), and business sources.
- Once reviewed, as outlined in the DevOps-feedback model Figure 5-left panel, the recommendation is sent to development and Release Management to implement based on feasibility and roadmap considerations.

Figure 5 presents, in the left panel, the IT industry DevOps standard for the customer feedback process. In the right panel, based on my research, I have developed a chart that represents my interpretation of the evolving video game industry update process. In this model, based on an evolving DevOps practice, updates are approved if they meet the long-term primary business goal (revenue) and can fit into the overall game roadmap.

Figure 5: Trends in Feedback Governance



<https://www.padok.fr/en/blog/devops-process>

Getting from production requirements to releasing a game update has never been easy. Focusing on development and ignoring or downplaying the community's role can diminish player interest and miss the core retention metric critical for product/service longevity. While video games continue to evolve from products to services, the philosophies and tactics used to support the underlying technology also adapt and evolve to enhance player engagement and interest.

Broadening the feedback process to include additional roles that integrate community feedback is an evolutionary process in which time and value will determine the outcome. "In a recent paper, Erik Brynjolfsson, Daniel Rock, and Chad Syverson found that major technology improvements may lag productivity gains for years, even decades. The most tantalizing reason

why: An ecosystem of other changes has to arise, along with new thinking about how the technology should be used, in order for it to have full impact." (Hardy, 2018)

These trends indicate that the Video Game industry is moving toward process integration focused on community-based delivery.

Future Work Direction

I hope this project can continue with an expanded audience and broader reach within the video game industry. At this juncture in the study, I have researched one aspect of the community impact on game evolution within a limited subset of participants. A broader audience would help to define the multidisciplinary direction game evolution governance appears to be taking within the industry.

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Appendix 1

Potential Target Companies

Games/vendors under consideration

This study will focus on US-based Video Game companies. My target list includes the top 10 U.S. Video Game companies identified by Dun & Bradstreet for 2020.⁹ In addition to a set of popular, though financially smaller, companies that fit my criteria.

Table 1:

**Companies/Studios
Referenced**

Microsoft Xbox
ArenaNet
Deep Silver Volition
Mojang

⁹ <https://www.dnb.com/business-directory/industry-analysis.entertainment-games-software.html>

Appendix 2

Interview Candidate Roles

Function	Production	Development	Marketing	Service (Operations)
Role	Production Lead	Development Lead	Marketing Lead	Community Lead
	Release Manager	Designer	User Research Lead	
Question	Who provides the requirements & rules for updates?	Who provides the requirements & rules for updates?	How do you handle requests for changes to the game?	How do you handle community input requests?
	What drives the timing and content of an update?	What triggers an update (large vs. small)?	What market data (information) drives your designs and upgrades?	How is community input distributed?

Appendix 3

Process Model Images

Figure 1: Initial Update Process Flow Model

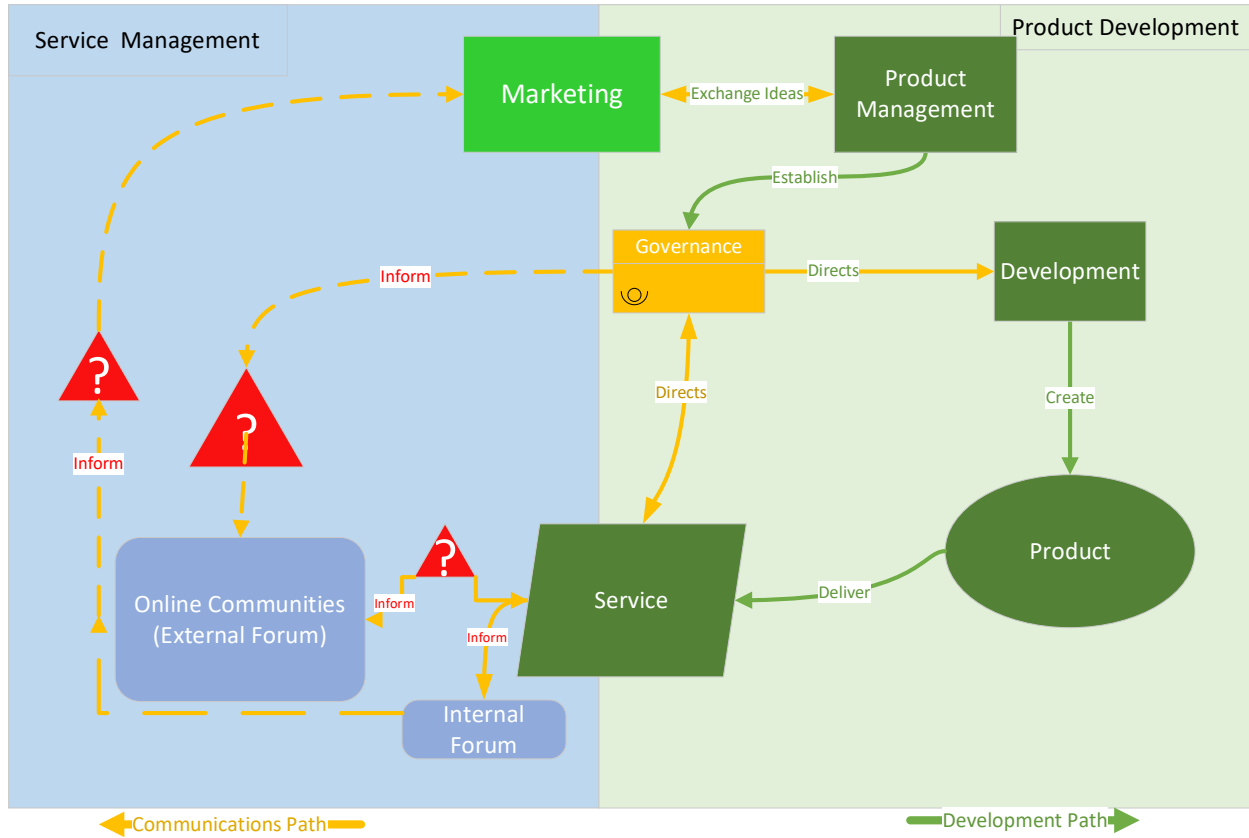
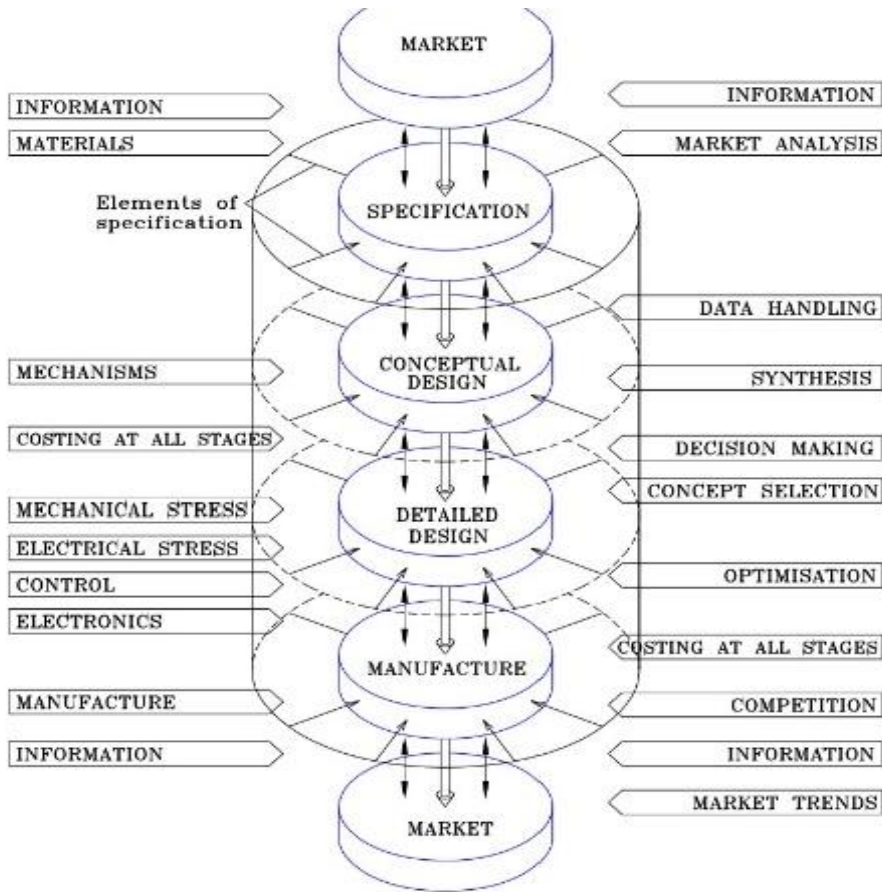


Figure 3: Sample Development Models -Left



The Total Design activity models proposed by Pugh (figure adapted from Pugh (1990))

Figure 3 : Sample Development Models -Right

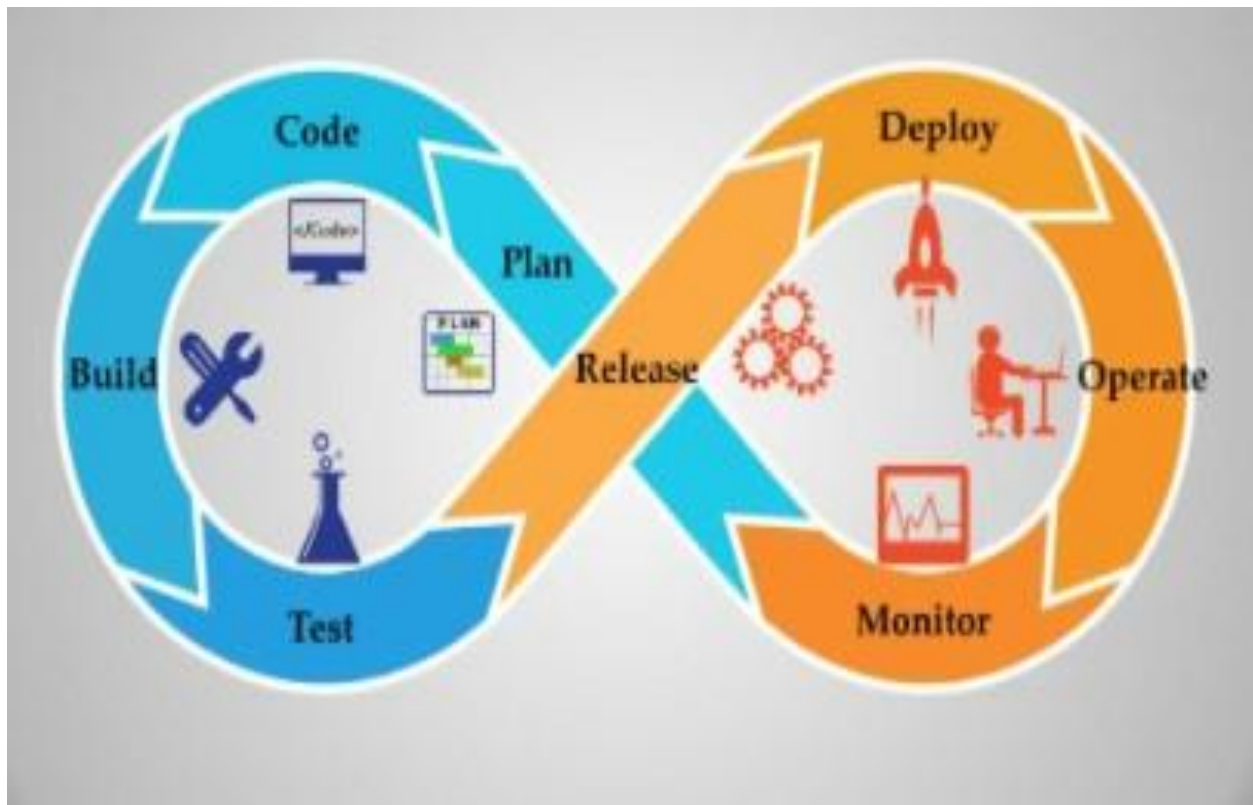


Figure 4: Interview Content Mapping

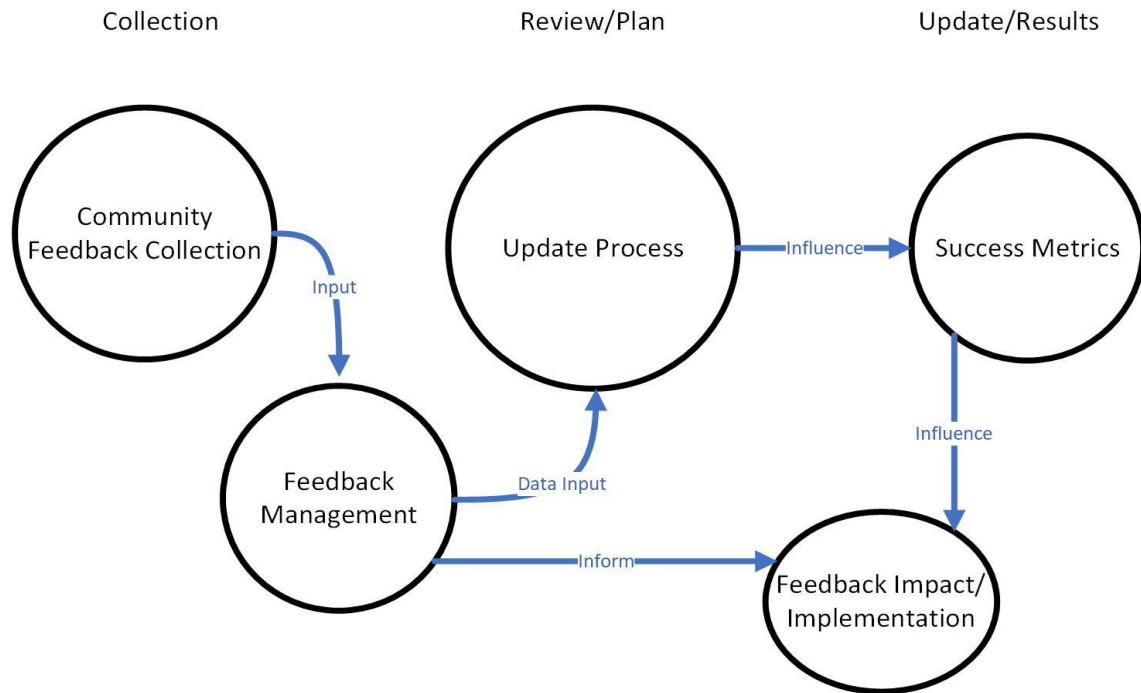
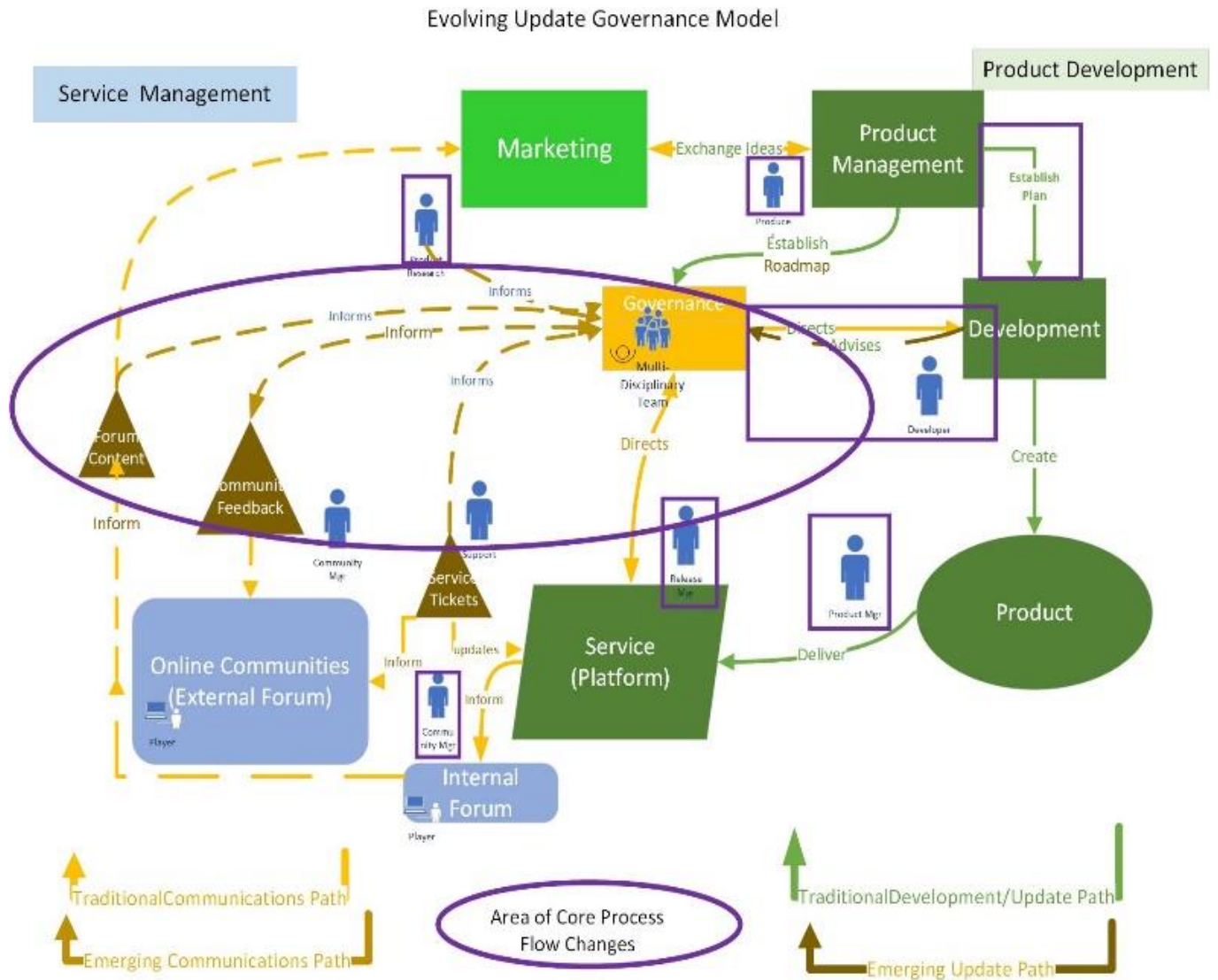


Figure 5 Trends in Feedback Governance -Left



Figure 5 Trends in Feedback Governance - Right



Appendix 4

Interview Outline

Background Questions:

1. Work experience:
 - a. Question: How long have you been working in this industry?
 - i. Question: What companies have you worked for – as either a full or part-time worker? And countries?
 - b. Question: What roles have you held in your current company; past companies?
 - i. Question: What games have you worked on?

2. Topic change request
 - a. Question: How do you know when an update is necessary for a game?
 - i. What signals you to do an update?
 - ii. Can you share an example of this process?
 1. Do you believe this process could use improvement? If yes, How?

3. Topic: Internal process flow
 - a. Question: Who is involved with a game update request?
 - i. Who in your organization gathers feedback that triggers an update?
 - ii. Do update or change requests come from multiple sources (i.e., marketing, community feedback, or other developers)?
 1. If so, can you give me an example of how you handle these multiple inputs?
 2. As a [role from Question 1], What are the challenges you have experienced when dealing with multiple change requests?
 - iii. How does your current process flow differ from your past experiences (other companies or projects)?
 - iv. What steps are followed within your organization (or experience) to complete the feedback loop to the change request source?
 1. i.e., Does the source of the request (i.e., marketing, community, or developers) get notified when it is completed?
 2. Can you give me an example of when you were involved in providing feedback to the request source?
 3. Are their different feedback strategies based on the source of the request (i.e., marketing vs. community input)?
 - a. Do you feel there are any challenges in the feedback process(s)?

4. Topic: Example of a recent update process
 - a. Question: Can you provide an example of a recent game update?
 - i. Can you walk me through the Intake process and actions by each participant?

1. Have you experienced any specific tense or challenges in this process? If so, can you give me a specific example?
5. Topic: Success factors
 - a. Question: What are the measures of success for an update?
 - i. How do you determine the best approach and success metrics for each change request?
 - ii. Have you experienced any challenges in establishing success metrics? If so, how did you overcome the issue?
 - b. Questions: Have you identified challenges in the overall change request process?
 - i. Can you provide an example?