

**Creating a Cross-Game Design System in Mobile Interactive Entertainment**  
(Technical Paper)

**The Success of Nintendo During COVID-19**  
(STS Paper)

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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## Introduction

Video games have become a common and potentially integral part of people's lives as technology continues to develop and prosper. The main goal of my technical project is to create a design system for King to implement on their various video games. As the company currently does not have a design system, this has led to numerous inconsistencies within and across their video games that negatively impacts the user experience. Additionally, time is wasted as there is no reference guide, which could contain visual examples, specifications, and code for an element, that designers and developers could utilize when creating each design component. By having a more standardized design across game platforms, this would allow for a smoother transition of users between apps and enhance the user experience. The design system produced would undergo usability testing, which gives my team feedback on which elements and areas can be improved, as well as further insight to what the client finds useful and appreciates. The design system would be adjusted to account for the feedback, undergo a second round of user testing, and the main takeaways would be published in a report.

With the widespread presence of video games and the current situation with the COVID-19 pandemic, my STS research topic is to study the recent burst of demand and success of the Nintendo Switch and Nintendo's sensational game, *Animal Crossing: New Horizons*, during these times of social distancing. Due to this unprecedented outbreak, various precautions have been enforced such as social distancing and small gatherings. Additionally, the fear of social interaction with others besides family members has been present for some since the beginning of the outbreak in the United States. This has led to increased isolation for people as friends and family members are no longer able to interact and meet each other as freely as before. As a result, video games have become a common source of entertainment, as well as a way to interact

with friends for many. I personally have picked up a new video game since the pandemic became serious in the United States, and have seen many friends start playing new games or even buying a Nintendo Switch console. As most people are aware, *Animal Crossing: New Horizons* became all the rage and hottest sensation since its release in March 2020. Many of my friends bought a Nintendo Switch to just play this game, and many stores have reported being out of stock of this console. With this game, the *Animal Crossing* series has surged in popularity during COVID-19 and it had a wide presence across social media platforms. I thought it would be interesting to research and further understand the statistics behind the surge of demand for the Nintendo Switch and what aspects of *Animal Crossing* made it the most popular game towards the beginning of the outbreak in the United States. A combination of the current state of the world and societal desires, led to *Animal Crossing: New Horizons* and Nintendo's great success.

## **Technical Topic**

### *Introduction*

King Digital Entertainment, the creator of popular mobile gaming applications including the Candy Crush Saga series, currently has approximately 280 million active users on their web, social, and mobile platforms (Minotti, 2020). While King tends to have similar and overlapping audiences for their games, the company does not have a shared design system that serves as a database of important design and component elements. Since there are different teams that work on different games, as well as different teams working on different elements within a game, established elements cannot be easily reused as there is no design system. This results in design inconsistencies within and across games, as well as wasted time as features have to be redesigned and implemented each time. Some examples of inconsistencies include the sizing of elements, color of the same buttons across the games, and positioning of in-game aspects. This tarnishes

the user experience as players have to adjust or re-learn ways to perform common interactions on different games. The goal of this project is to create a standard design system to guide King's designers and developers in 1) a redesign of released mobile gaming applications and 2) adjusting the current design in unreleased mobile gaming applications. The design system would consist of common elements and "best practices" that would increase consistency among and within apps, reduce time developers and designers spend on recreating a feature, and enhance the user experience overall.

### *Design System and Considerations*

The biggest challenge of this project is balancing standardization and customizability. The design system would compile common existing features and offer various "standard" recommendations or references for when designers and developers want to implement a feature, such as the size, appearance, or positioning of a design component. As this guide could be referenced when building a new element, the design system would reduce the number of inconsistencies, creating greater cohesion and uniformity among and within the games. This would make it much more efficient and quicker for designers and developers to implement elements into the games. An important factor to consider is that this design system would, in a sense, restrict the creativity and openness of designing a feature to one's liking. At King, people enjoy the flexibility that they have with designing features. However, even employees have noted that this flexibility has led to numerous inconsistencies and the desire for a design system. This was learned through meeting with my group's main point of contact with King, who is a senior user experience designer located in Barcelona, Spain, and a lead user experience designer in Stockholm, Sweden.

### *Course of Action and Project Timeline*

The advisor for this project is Gregory Gerling, and the team is composed of five systems engineering students, Erin Hopkins, Jackie Mazzeo, Emma Peck, Kelcie Satterthwaite, and myself. The team meets weekly with our advisor and is set to meet bi-weekly with our main point of contact with King. The group has already explored Candy Crush Saga and Candy Crush Saga Friends, and documented numerous inconsistencies into the following categories: representation, presentation, interaction, and navigation. These findings were presented to our advisor and main point of contact with King. The design systems of Microsoft, Apple, Google, and IBM were analyzed to determine important elements and aspects that could be incorporated into our design system for King. Afterwards, Atlassian's Confluence was used to implement a scorecard that would serve as a reference for teams when reviewing a feature. This scorecard has design parameters of interest and metrics, while the specification, priority, and evaluation for each metric would be determined by the team. The scorecard provides a percentage to show the team how well the feature meets their selected parameters, while accounting for the weight of a parameter's priority (required, flexible, or not required).

For the rest of the fall semester, the group will continue to meet with the client to further understand what components should be focused on for our design system, determine the guidelines we want to include and the best way to present them, present deliverables to the client, and receive feedback from the client to make improvements. For the spring semester, we plan to conduct usability testing and receive feedback from the designers and developers at King on the design system, use the feedback to make changes to the design system and follow up with further usability testing, and identify ways to expand our deliverables on their existing and upcoming projects. The results of this project will be published in a conference paper and presented at the Systems and Information Engineering Design Symposium (SIEDS) in April 2021.

## STS Topic

### *Introduction*

The primary objective of this study is to analyze the effects of COVID-19 on video game activity and explore why and how games, particularly *Animal Crossing: New Horizons (ACNH)*, were able to flourish during this time. Using the STS framework of Social Construction of Technology (SCOT), I will explore the demand of the Nintendo Switch console during COVID-19, *ACNH* fulfilling the desire for interaction during the pandemic, and *ACNH* being a platform to escape the real world while giving players control of a place resembling the real world. This paper will elaborate upon and go into depth about how technology was able to fulfill these societal desires, which ultimately led to the prosperity and success of the Nintendo Switch and *Animal Crossing: New Horizons* during uncertain times with the outbreak of COVID-19.

### *STS Framework*

The STS framework that will be used for this study is the Social Construction of Technology (SCOT). The origin of this theory is Trevor Pinch and Wiebe Bijker's article from 1987, "The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other." The main idea behind this theory is that social structures have the ability to influence the development of and shape technology. SCOT consists of four main components: interpretive flexibility, the concept of the relevant social group, closure and stabilization, and the wider context (Klein and Kleinman, 2002).

### *Demand for the Nintendo Switch as a Source of Leisure and Entertainment*

The outbreak of COVID-19 has undoubtedly led to an increase in video game activity due to social distancing and preventative measures. As people are stuck at home, millions of people have turned to video games for safe and fun social interaction. Nintendo Co Ltd.'s profits

increased by over 400% in its fiscal first quarter this year, which ended June 30th, as the demand for the Switch console and games skyrocketed during the COVID-19 pandemic. More than 5.7 million Switch consoles were shipped in the quarter, up 166.6% year over year. With the demand for the Switch due to stay-at-home orders and other safety precautions, Nintendo ran into supply issues due to factory shutdowns in China. This resulted in component shortages and slowed output for factors in Vietnam, where the Switch is manufactured. As of August 6, 2020, there was still a shortage of the Switch and Switch-Lite at retailers across the globe (Haider, 2020).

The main driver for Switch sales was due to one game, *Animal Crossing: New Horizons*, which was released on March 20, 2020. The *Animal Crossing* series has been around for almost 20 years, but only really exploded and became a worldwide sensation this year. Around 11 million units of *ACNH* by the end of March and 10.6 million units of the game sold within the June quarter (MacDonald, 2020). Pictures and clips of the game have been seen on all social media platforms since its release, and has been played by numerous celebrities, popular gamers, and influencers. Within a few weeks, it became the number one trending game in Japan, U.S., South Korea, France, and Spain. Rishi Chandra, the global head of gaming partnerships at Twitter, noted that this game became the number one most-talked about game in the world. He mentioned that this feat was impressive as it dethroned *Fate/Grand Order*, which held that title for almost two years, and *Fortnite*. Since launch, conversation volume has increased over 1000% and the number of people tweeting about the game grew over 400%.

Within a few weeks of the game's release, there were more than 38 million tweets about the game. Many people celebrated the game's ability to provide comfort and social interaction during a time of isolation. Joseph Gorordo, a vice president of outreach for a chain of music-based alcohol and drug treatment centers, has used *Animal Crossing* to connect with his clients

while practicing social distancing. He believes that *Animal Crossing* offers a haven, particularly for millennials, and can provide players with a feeling of empowerment and community, especially since people are being told to stay at home during the pandemic (Khan, 2020). Kyrie Caldwell, a video game researcher at UW-Madison Wisconsin Center for Education Research, said that *ACNH* probably would have been a popular game in any situation, being a game from Nintendo. However, he also believes that the isolation people experience due to the pandemic and various health measures led to the skyrocketed purchases and playtime (Mesch, 2020). Nick Fiondella, a gamer and a streamer, states that *ACNH* is a “super casual” game that is relaxing, but also has opportunities for players to meet others online within the game. He notes that these elements appeal to both hardcore and more casual players (Huddleston Jr., 2020). With social distancing and staying at home measures in place, the Nintendo Switch and *ACNH* offers a source of entertainment and leisure for people.

### *ACNH Fostering Interaction*

As the ability for interaction has become restricted due to COVID-19, *Animal Crossing: New Horizons* offers multiple ways for players to feel that sense of interaction. In *ACNH*, there are residents on your island, known as villagers. These characters consist of a wide array of animals, ranging from cats to penguins, and will have one of eight distinct personalities, such as peppy, jock, and lazy (Lowry, Holly, and Nelson, 2020). Villagers have their individual appearance, voices, and music, making each one unique. This resembles society that is composed of people with different looks, interests, and behaviors. Players are able to interact with these villagers by chatting with them, giving them gifts, and even coordinating expressions and gestures. As an *Animal Crossing* player, Mesch states that “I wasn’t alone – I was, of course,



surrounded by the cute animal residents of my island” (Mesch, 2020). With all different sorts of characters and their varying characteristics that players can interact with, this mimics real life.

Another vital feature of *ACNH* is the ability to connect friends together. Players can fly to each other’s islands, via an airport on their island, using a code and internet connection. This allows people to show their island to their friends, interact with different characters, and even shop at each other’s stores. Players also have the ability to chat with each other in-game. The game’s creators at Nintendo found the virality of the game validating as they intended for it to be shared. Hisashi Nogami, the *Animal Crossing* series producer, believes that those who have been playing longer would have more knowledge and tips, and could share this information with others. Aya Kyogoku said that *Animal Crossing* is a communication game. She hopes that with the game, people enjoy communicating with each other, whether that is through playing the game with others or simply talking about the game (MacDonald, 2020). Researcher Caldwell shared that she’s video chatted with a friend talking about life and the game, while both were playing the game on their Switches. She also described that *ACNH* gives players the experience of traveling to visit friends and family and how she was surprised by how nice it felt when she visited her brother’s island (Mesch, 2020). Those who have spent lots of time and effort designing their island have even shared their island’s code with the public. This showcases both how excited people are to show others their island and that people want to visit players’ islands. People have designed their island to all sorts of themes, ranging from *The Office* to *The Legend of Zelda* (Spear, 2020). *ACNH* is able to effectively serve as a platform that allows users to experience interaction through different in-game characters, as well as real life people.

#### *ACNH Serving as a Way to Escape the World While Resembling It*

*Animal Crossing* draws parallels with the real world that continues whether you are there

or not. Time passes as in real life, the weather and seasons change, the villagers converse with each other and you, and the various aspects of the island feel interconnected. Players have daily tasks, such as shaking trees to collect fruit, digging up fossils, fishing, and catching bugs with a net. In doing so, players are rewarded with points for completing these tasks. Players can also pay off mortgages for their home, craft items, create their character's outfit, pluck weeds, plant flowers, and redesign their island. By having a world that is filled with activities, as well as giving players the freedom to do as they choose and the flexibility to be creative, this resembles a world that players have control. The daily tasks offer a sense of responsibility and achievement, while redesigning the island allows players to see their thoughts come to life.

Mesch shared that she feels that “players have a lot of control over what happens on their islands, something that I and many others have felt we’ve lost with the uncertainty of the pandemic.” She also noted that seeing her island grow and thrive feels like a “utopian opposite” of life presently, as some local businesses are struggling and family, friends, and neighbors are feeling disconnected from each other (Mesch, 2020). Ultimately *Animal Crossing: New Horizons* offers players the ability to create an island to their liking and have ownership, while incorporating various real-life activities in a tranquil world.

### *Methodology*

The main goals of this study are to explore and analyze success and prosperity of the Nintendo Switch and the game *Animal Crossing: New Horizons*, focusing on how they fulfill the desires of society during COVID-19. As COVID-19 and the success of *Animal Crossing* are more recent events, the main sources of information and analysis may have to be credible articles posted online, as well as potentially informational videos. Scholarly journals can be looked into as well, such as *The Psychology Behind Video Games During COVID-19 Pandemic: A Case*

*Study of Animal Crossing: New Horizons* from Wiley Online Library (Zhu, 2020). The next steps would be to further explore these sources, whether they are academically sourced or deemed as credible articles posted publicly, and analyze them to elaborate upon the main purpose of this paper. A goal would be to find sources that are able to statistically address the impacts of *Animal Crossing: New Horizons* on people with respect to the pandemic. Additionally, more articles and sources can be researched to fill in potential gaps or add useful information. With the year wrapping up, new useful studies and sources may be shared and deemed valuable for this paper.

### **Conclusion**

The technical paper focuses on my capstone project regarding creating a design system for King, the creators of Candy Crush Saga, in order to increase standardization across games. Inconsistencies within and across games were documented, existing design systems were explored, and the use of incorporating a scorecard is in progress. The next steps involve finalizing this scorecard, as well as conducting usability testing of it to receive feedback from the client. The design system will be refined and finalized next semester, and the results of this project will be published in a conference paper and presented at SIEDS in April 2021. The motivation of the STS paper is to analyze the impact of COVID-19 on the surge of the demand for the Nintendo Switch and why certain games, particularly *Animal Crossing: New Horizons*, became so popular. The Social Construction of Technology framework is utilized to assess the social factors that influenced the rise of people's demand for the Nintendo Switch and how *Animal Crossing: New Horizons* satisfied people's desires, particularly interaction and control, during these unprecedented times. Specific examples on how the game and its elements do so are explored. Further research will be conducted using academic sources and credible articles.

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