Comroddity, the Alternate Reality Game Show

Submitted to the faculty of
WORCESTER POLYTECHNIC INSTITUTE
in partial fulfillment of the requirements for the

Degree of Bachelor of Science
in Computer Science

and for the
Degree of Bachelor of Science
in Interactive Media and Game Development

and for the
Degree of Bachelor of Arts
in Interactive Media and Game Development

Authors:

John Edward Carrotta  
(he/him)  
jcarrotta@wpi.edu

Justin Santiago-Wonoski  
(he/him)  
jwonoski2@wpi.edu

Niralya Sundararajan  
(she/her)  
nsundararajan@wpi.edu

Madelyn Vecchia  
(she/her)  
mveccia@wpi.edu

Faculty Advisors:

Prof. Melissa Kagen (she/her)  
mkagen@wpi.edu

Prof. Erin Solovey (she/her)  
esolovey@wpi.edu

This report represents the work of WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on its website without editorial or peer review.
Abstract

Our team designed, developed, and ran an alternate reality game revolving around “Comroddity,” a game show created by a mysterious, zany organization to instill WPI campus with their three core pillars: Buffoonery, Ingenuity, and Community. To promote accessibility and immersion, our team developed many layers of interaction allowing players to engage with the ARG as much or as little as desired: these included four game show episodes broadcast over a month, a Discord server for socializing, an Instagram page to promote our show across the WPI community, and a string of websites for absurd fictional organizations filled with hidden puzzles. As the first alternate reality game both developed and run in one MQP at WPI, and designed with the goal of providing an accessible, humorous, and low-stress experience unifying the campus community, Comroddity gave us key insights about running a large-scale ARG experience shaped by the opinions and wit of the student body. In addition, we had the unique opportunity to clarify the concept of ARGs with WPI’s Institutional Review Board, paving the way for future ARGs to be run at this scale.
Acknowledgments

Our team would like to acknowledge Dr. Melissa Kagen and Dr. Erin Solovey, our advisors, for their continuous counsel and guidance during this project. Additionally, we would like to acknowledge Renee Cullman and Vijay Mistry for their vital work on this project during A, B, and C terms of the 2023-2024 academic year.

We sincerely thank our nine wonderful game show contestants who helped our team bring Comroddity to life on-screen -- Vijay Mistry, Justin Weintraub, Ronan Binney, Jatin Kohli, Eli Hoffberg, Emma Gilroy, Marisa Higgins, Alex Pietrick, and Katherine Jesse -- as well as all of the WPI students who participated in our online game and playtesters who provided feedback.

We would additionally like to thank Ruth McKeogh and Dr. Gillian Smith for their dedicated and patient guidance to us through the IRB approval process, and Dr. Ermal Toto and the rest of the WPI Academic & Research Computing team for their diligent, timely assistance keeping Comroddity’s web services online and accessible.

Finally, we acknowledge the critical work of Professor Dean O’Donnell in fostering the creation of ARGs and immersive community games during his founding of, and two decades guiding, IMGD. Our team took his rules to heart: “don’t be a [jerk], and don’t get me fired.”
# Table of Contents

Abstract............................................................................................................................................ 1  
Acknowledgments........................................................................................................................... 2  
Table of Contents............................................................................................................................ 3  
Table of figures............................................................................................................................... 6  
Introduction....................................................................................................................................... 7  

## Literature review
- Immersion and the boundaries of alternate reality ................................................................. 9  
- Audience as a narrative actor .................................................................................................... 12  
- Time logistics and scheduling play ............................................................................................ 14  
- Puzzle direction ........................................................................................................................ 15  
- Technical and mechanical precedents ....................................................................................... 16  
- American Freeform as an inspiration ......................................................................................... 17  

## Design
- High concept ................................................................................................................................. 19  
- Design specifications .................................................................................................................. 20  
- Icons of the show ......................................................................................................................... 24  
- Narrative threads ........................................................................................................................ 26  
- Design of the show ....................................................................................................................... 26  
- Surfacing themes through sponsors ......................................................................................... 27  

## Implementation
- Technical and narrative teams .................................................................................................... 29  
- Project management ................................................................................................................... 30  
- Shifting project work structure .................................................................................................. 31  
- Producing the game show .......................................................................................................... 32  
  - Production schedule .................................................................................................................. 32  
  - Contestants ............................................................................................................................... 33  
- Technical implementation .......................................................................................................... 34  
  - Main web application ............................................................................................................... 34  


Sponsor websites ................................................................................................................... 36
Other web presence ................................................................................................................ 38
Maintenance .............................................................................................................................. 39
Ending of Comroddity ............................................................................................................. 40
Working with the WPI Institutional Review Board ................................................................. 42
“Deceiving nature” .................................................................................................................... 42
Consent ........................................................................................................................................ 43
Required materials ..................................................................................................................... 45
Campus publicity ........................................................................................................................ 46
Protofest and Alphafest ............................................................................................................. 46
Poster design ................................................................................................................................ 47
Social media presence .................................................................................................................. 48
Other methods ............................................................................................................................. 48
Evaluations ..................................................................................................................................... 50
Cut content and changes from original design .......................................................................... 50
IRB takeaways .............................................................................................................................. 52
User engagement ......................................................................................................................... 53
User feedback ................................................................................................................................. 54
Overall success of Comroddity ..................................................................................................... 58
Reflections ..................................................................................................................................... 60
ISP teammate critique .................................................................................................................. 66
Conclusion ..................................................................................................................................... 68
References ................................................................................................................................... 69
Appendices .................................................................................................................................... 71
Appendix A - Rubber duck acquisition ....................................................................................... 71
Appendix B - Main website .......................................................................................................... 71
Appendix C - Sponsor websites ................................................................................................... 71
Appendix D - Episodes of Comroddity ......................................................................................... 72
Appendix E - Comroddity questions and tasks .......................................................................... 72
Appendix F - Comroddity posters ............................................................................................. 74
Appendix G - Past designs
Table of figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Example of a daily question prompt on the Comroddity website</td>
<td>21</td>
</tr>
<tr>
<td>B</td>
<td>Example of a weekly task</td>
<td>22</td>
</tr>
<tr>
<td>C</td>
<td>The Contestants of Episode 3 of Comroddity laughing at a joke</td>
<td>23</td>
</tr>
<tr>
<td>D</td>
<td>The ‘Host’ character, played by Madelyn Veccia</td>
<td>23</td>
</tr>
<tr>
<td>E</td>
<td>Buffant’s Institute of Clowns sponsor website</td>
<td>24</td>
</tr>
<tr>
<td>F</td>
<td>Iconography of Comroddity</td>
<td>25</td>
</tr>
<tr>
<td>G</td>
<td>Results of playtesters’ favorite aspect of Comroddity.</td>
<td>54</td>
</tr>
<tr>
<td>H</td>
<td>Playtesters’ experience with first pillar</td>
<td>55</td>
</tr>
<tr>
<td>I</td>
<td>Playtesters’ favorite sponsor site</td>
<td>55</td>
</tr>
<tr>
<td>J</td>
<td>Episodes playtesters watched.</td>
<td>56</td>
</tr>
<tr>
<td>K</td>
<td>Playtesters’ favorite episode.</td>
<td>56</td>
</tr>
<tr>
<td>L</td>
<td>Feedback results on engagement</td>
<td>57</td>
</tr>
</tbody>
</table>
Introduction

*Comroddity* was a four-week alternate reality game (or ARG) centered around – and run under the guise of – a weekly WPI campus game show. Taking place in C Term of the 2023 to 2024 academic year, the game encouraged two distinct forms of low-pressure play: submitting responses to eclectic daily prompts and watching those answers appear in the weekly show, and solving puzzles provided by the show’s inane “sponsors.” In allowing players to engage at the level appropriate to them, the game encouraged participation in whichever form their schedule allowed, as well as passive engagement with the game even if they could not spare the time to actively solve puzzles. These two mechanics were facilitated by a React application and Express API built from scratch, allowing remote access to daily prompts, broadcasts, recordings, and puzzle websites all in one place. With this accessible game hub and ergonomic experience for busy players, Comroddity enforced a low barrier to entry and lighthearted overarching tone.

Alternate reality games such as Comroddity, henceforth referred to as ARGs, are a form of collaborative storytelling project in which a collective of players, often one or more large teams, engage with an *alternate reality* which overlays a fictional plot on top of the real world. Often comprised of narrative beats, puzzles, scheduled events, written or improvised characters, fabricated locations or organizations, and sometimes branching outcomes, the typical ARG plot seeks to allow players to shape their own identity as a character in the story. An ARG may take place completely virtually via the Internet, completely in-person, or any combination of the two.

“Collaborative” has a dual meaning in the context of ARGs: it refers both literally to collaboration between fellow players in exploring the content of the game, as well as the quiet “dialogue” between the designers and players in which players’ actions shape the narrative in unexpected ways, much like an improvisational exercise or roleplaying game. This emergent gameplay is a cornerstone of any ARG, as it is critical that any immersive alternate reality respond to player input and affirm the impact of their choices just as real life would.

While the WPI IMGD program runs multiple small-scale ARGs every year, few have managed to attract a broad student audience and leave a lasting community legacy. This is by no means for lack of trying: with only a few weeks for students enrolled in IMGD 1002, *Storytelling in Interactive Games*, to entirely conceptualize, build, and run their own ARGs, games run over
brief time frames and must do so with heavily restricted technical resources. This constraint lends itself to brisk progression, dense lore, and a strong sense of exhilaration for players, yet leaves limited room for games to explore longer-term engagement models and social impact.

It was for this reason that our team developed Comroddity to explore the possibilities of longer-form ARGs as a community-building medium, our operant design goal being the fostering of lasting connections and memories between players. An uphill battle was anticipated from day one: with the early decision that our game would run during C Term, an infamously busy period of every academic year at WPI, we knew our players’ time would be under severe constraints and we would have to meticulously design our game to fit within their schedule and, ideally, provide some levity to an otherwise difficult seven weeks.

Furthermore, this project was the IMGD department’s first “secret MQP,” a project pitched and developed with no publicity – and completely anonymously – to avoid spoiling its surprise to would-be players. This came with additional challenges, as in the eyes of the WPI Institutional Review Board (IRB), a game which hid its true nature and developers’ names straddled a line between honest and deceptive research; while in the interest of publishing this paper we found a resolution in the form of in-game safeguards, we consider this discussion to remain unfinished. Herein, our team proposes that the ideals of ARGs as entertainment misalign with the infrastructure of research, and that under this infrastructure, ARGs must either make an immersion-breaking compromise and eschew a core value of the medium, or forgo publication.

With the deployment of Comroddity in February of 2024, our team sought to share in an accessible, humorous, and low-stress experience with which students could engage as much or as little as they chose; with an overall narrative driven by both asynchronous survey responses and live-recorded quips by players, we aimed to allow participants to shape the game’s voice and, consequently, legacy. While our achievement of these goals was jeopardized by external factors, some outside of our control, the game ran successfully and accrued a small student audience over its four-week duration. Perhaps more importantly, our team carefully documented our former hurdles and cleared many of them -- the most significant being our discussions with the WPI IRB which clarified the definition of ARGs from a research standpoint. Our team has written this report both as a formal document and in hopes that it can be the “secret MQP handbook” which we never had, guiding future work in the problem space of immersive community games.
Literature review

In preparation for the creation of our own ARG, and bearing in mind our interest in creating an ARG which specifically engaged the WPI community, our team researched a number of samples of past work in the problem space of community games. Our concerns included managing immersion, giving our audience a voice in the story, scheduling our game, puzzle design, emerging uses of technology, and other forms of community role-playing games which could inspire novel forms of gameplay. As such, we have assembled a set of reference pieces which we consider thorough in addressing these topics.

Immersion and the boundaries of alternate reality

With immersion serving as the cornerstone of any well-assembled ARG, precedents in interaction between the real world and alternate realities, both positive and negative, must be considered carefully: SEED, an immersive experience conducted at the University of Chicago, stands out as an educational tool and success story in emergent play that artistically explores the line between the two. The first chapter of the book *Alternate reality games and the Cusp of digital gameplay* analyzes the SEED ARG and brings to light several of its design principles.

SEED used a science fiction framework to address critical global issues such as climate change, resource depletion, viral spread, and global inequality, all framed around the narrative of a suspicious scientific organization trying to determine which player in the game was going to be the harbinger of an apocalypse. Using the narrative as an allegory lending urgency to world issues, SEED encouraged players to use the game world as a playground for instigating change, proving that their actions could inspire world improvement both in and outside the game.

SEED inverted traditional hierarchy by presenting characters in positions of authority displaying absurd and dubious behavior, thereby inviting players to question and oppose them. This inversion not only disrupted conventional power dynamics but empowered players, who occupied lower rungs in the game's hierarchy, allowing participants to engage with the narrative by challenging the game's apparent rules rather than accepting them. This progressive design encouraged a shift in gameplay in response to this defiance: the object transitioned from competitive, rule-based engagement to collective rebellious play culminating in an on-campus
protest centered around the fictional theft of a communication device called SEED. This deliberate progression responded to players’ growing understanding of the game's boundaries and fostered a sense of unity and power among players.

SEED’s emphasis on community building and teamwork challenged the prevailing culture of competition and individualism. Players reported a growing sense of community, teamwork, and collaboration, which came to a head with the organization of the in-game protest. In this way the ARG prompted reflections on unity amid diversity and the ability to work together in the face of differences.

SEED blurred the boundaries between the game world and reality. Some players felt a sense of reality in SEED because of its persistent game world, interactions with actors, and a shared sense of playfulness. This blending of reality and fiction was demonstrated by the protest: during this occurrence, the ARG breached the real world as unaffiliated members of the campus were confronted by the players' actions. Instances like these enhanced the overall gravity of the game and engagement of participants. As illustrated in the protest formation, SEED allowed players to have agency and influence the game's direction through active interplay with the designers. This allowance for a final real-world impact deeply resonated with players, bolstering immersion and making ARGs like SEED an attractive form of learning.

The case of SEED suggests that ARGs, when designed thoughtfully, have the potential to promote community, agency, and encourage players to reimagine and co-create the world. SEED illustrates the power of ARGs as immersive, educational, and bond-forming experiences, and this capacity to build community via subversion was a key source of inspiration in our project vision.

Maintaining this level of immersion in an alternate reality narrative can be delicate and audience-sensitive. ‘This Is Not a Game’: Immersive Aesthetics and Collective Play by Jane McGonigal describes the story of the Cloudmakers and how they played through the Beast ARG. The paper begins by describing what may be the worst-case scenario for a group known for solving ARGs and similar puzzles. The group attempted to “solve” the terrorist attacks on September 11th, 2001. While these solvers were shut down relatively quickly after they began, this stands as a reminder of the dangers that ARGs pose when they straddle the line of real life.
The Cloudmakers were an online group created to solve the massive ARG known as the Beast. The Beast was a primarily online ARG created for the movie *A.I. Artificial Intelligence* by Steven Spielberg. The ARG was very large and the creators maintained a “group mentality” when creating their puzzles: essentially, they required groups of people to solve their puzzles. This design choice was significant to our project since we were similarly aiming to attract the largest player base possible for our ARG. Designing with the group in mind fosters a sense of community amongst players by encouraging them to play the game together; given that communication and community were key aspects of our design philosophy, all of our puzzles were designed with the possibility of group collaboration in mind.

The Beast ARG always strived to fully immerse their players in their alternate reality at any cost, with a dedicated focus on heavily on integration into players' daily lives. This succeeded in engaging players, but some would argue it worked too well. Cloudmaker players reported losing jobs, relationships, and even houses over their total obsession with the Beast. In light of this, immersion can be a useful tool, but if handled irresponsibly it can have disastrous consequences. It was for this reason that our team provided clear disclaimers on all project assets that could be mistaken as real to avoid the issue.

The final lesson from the Beast and the Cloudmakers is keeping one’s audience in mind. The creators of the Beast at one time had a large batch of content prepared that they estimated would last three months, but the Cloudmakers tore through it in just one day; the creators of the Beast had no idea how powerful their audience was and paid dearly for that miscalculation. We knew early on that the intended audience playing our ARG would be WPI students, with our earliest “rabbit hole” and teaser content catering to the campus community, and with that in mind the cautionary tale of the Beast urged us to fully respond to our student audience’s capabilities in two ways: forcibly spacing out content, and tuning difficulty based on their performance.

**Audience as a narrative actor**

Making an audience feel “seen” and acknowledged by the game can occur at a number of possible depths. Ways to engage with players can range from simple canned responses and “easter eggs” rewarding creative discoveries, all the way down to sophisticated systems tracking
granular player actions and reshaping the narrative based on them in real time. While the average ARG will fall somewhere between these extremes, the more “responsive” the narrative is, the better it will promote each player from an “observer” role to that of an active agent in the story.

One striking foray into this idea was dreamt up by Thomas Dolby as a way to promote his final album and round out his career. Noticing that people were invested in the worlds he had crafted over time through his music, he endeavored to create his very own ARG: *A Map of the Floating City*. A community-based game revolving around gathering and trading, it featured various “tribes” of players and fostered a sense of community within each group.

*A Map of the Floating City* stands as a strong case study on ARG design involving heavy developer-player interaction, as fans crafted their own stories as they captained their ships and even patented their own inventions, leaving a personal mark on the game’s world. Many events within the game even spawned from inside jokes that the players started: for example, when players joked that the “moth” item was appearing a little too frequently, the developers implemented a moth takeover event where they would rapidly multiply and consume items. Another example was when a single player claimed that all the in-game dolls were haunted and declared themselves the embodiment of all the “haunted” dolls, a spontaneous move that fellow players and developers alike took in stride. So it was that all dolls were, canonically, considered haunted for the rest of the game, and “under the control” of a singular player.

The reward for the winning tribe in this ARG was a private performance by Dolby himself, so players were deeply incentivized to work together. The game was memorable both in the sense of community it fostered and the engaging, witty interactions it facilitated between the players and developers; as we endeavored to create a similarly witty tone for our game, *A Map of the Floating City* served as a strong case study on how to connect with players using shared jokes and allow their humor to shape the comedic backbone of an experience.

Another radically effective, though less humorous, implementation of an audience-driven ARG was the *Dexter Alternate Reality Game* released between the 4th and 5th seasons of the hit show *Dexter*. Showtime created the ARG for promotional purposes; the game began with a live murder scene installation at the 2010 San Diego Comic-Con. During its roughly two-month
runtime, players helped ex-FBI agent Dee “Serial Huntress” Pratt track down a serial killer, dubbed The Infinity Killer, through the use of “crowd-sourced crime fighting.”

The ARG integrated elements across various platforms, including websites, social media accounts, online communities, phone calls, and real-world events. Real-world elements included cryptic packages in the mail, live events, and in-game elements that referenced events taking place in everyday life. This real-world integration blurred the boundaries between the game and reality, creating a unique layer of immersion.

Immersion was additionally increased through player-designer interaction. Participants were in constant communication with the character of “Serial Huntress.” She would respond to comments made on her forum and posted update videos, which acted as rewards. Both Huntress and The Infinity Killer would make references to specific players. As participants acted in this experience as themselves rather than an alternate role, these direct references and interactions promoted a deeper, more visceral connection to the characters and overall narrative; our hope was to inspire the same within our own player base.

The collaborative and community-driven nature of the Dexter ARG often led to emergent storytelling. As players collectively discussed and debated clues, puzzles, and choices, a consensus would emerge, shaping the direction of the narrative. This was demonstrated in the conclusion of the game, which forced players to live vote on which of the main characters would die, a severe narrative outcome directly left to the players’ choice. The community's shared decisions contributed to a sense of ownership over the story's progression. The Dexter ARG served as an innovative promotional tool for the television series, effectively harnessing fan engagement to build excitement for its upcoming season, while also standing as a strong piece of media on its own: the gamed demonstrated how ARGs could foster a deep sense of fan involvement, loyalty, and anticipation within a connected community.

Time logistics and scheduling play

While many people who play video games report that they do not enjoy time limits in video games, with some critics even stating that time limits may never find effective execution in game design, the implications -- and applications -- of time are key to consider when creating a
game built around the real world. Time as both a mechanical and logistical constraint may appear limiting, but harnessed correctly it can serve as a powerful tool in guiding players, reorienting their attention, and lending structure and gravity to a narrative.

Many of these ideas are touched on by Kellian Adams Pletcher in her chapter in Well Played: Special Issue named In Praise of the Mundane. Pletcher was an “Institutional Mastermind” at a former company called SCVNGR which specialized in creating addictive scavenger hunts in the real world; however, in light of the genre's resurgence through escape rooms, Pletcher shared her insight on how time is vital to crafting the perfect experience.

First, creating scheduled time slots gives players an opportunity to prepare for what they are about to partake in. People are often unwilling to participate in events without prior planning and social situations can be stressful for many; a player-guided schedule allows people to decide when to engage with a story at their own pace. Moreover, these time slots imply a commitment. Players need a reason to participate in the activity they are being invited to: when a time slot (and even an entrance fee) is established, participants will show an active interest in playing a game towards which they have already promised a fixed amount of their time or resources.

Pletcher finally notes that time itself is an “affordable luxury” when it comes to games. When a community is constantly busy and strapped for time, something as simple as an hour set aside for games becomes appealing. In fact, in smaller intervals, time itself becomes a fun-to-navigate obstacle in a game. Boda Borg, an escape room center, has timers of as small as three minutes, which pose a major obstacle in many rooms and make them more fun and engaging to solve.

Creating a predictable time and place helps establish the game’s “magic circle” into a comfortable schedule where players can reliably give their attention to the game. Though player-scheduled events and time slots were infeasible, the idea of routine was imperative to us as we sought to create a weekly event that players would anticipate and look forward to.

Puzzle direction

Puzzles are the foundational building block of any ARG. Whether simple riddles, complex computer problems, or a conundrum that spans months or even years before an answer is found, they are essential to keeping players engaged and interested in the outcome of the
experience. *Puzzlecrafter: How to Make Every Kind of Puzzle*, by Mike Selinker and Thomas Snyder, provides an in-depth look at almost every type of puzzle imaginable, from perception puzzles to word puzzles, to logic puzzles and even meta puzzles (where our focus lies).

With such a variety of puzzles from which to work from, the need arose to determine which puzzles will work for this project, as not every puzzle is suited for every situation. The most useful section to us is the 4th chapter, titled “Interactive Puzzles,” with subsections for environmental puzzles like scavenger hunts, geocaches, webcrawls, and multipuzzles for puzzles such as metapuzzles, escape rooms, and even some discussion of ARGs. This chapter reinforces the kinds of puzzles that made up the bulk of our own game and also talks at length about how to link them in unique ways. Using real-world props, scavenger hunts, digital crawls through websites, and even live actors can all increase immersion and intrigue in the game at hand.

Two critical takeaways emerge from the ARG section itself. The first takeaway is how we, as the designers, are not “telling a story.” We, *along with the players*, are building a story together and watching it unfold in real time. It is important to allow the players the space, opportunity, and freedom to make the game their own and invest themselves in it. We, as the designers, are charged with making engaging puzzles and then “getting out of the way” to give the players time to solve them in their own way.

The second takeaway is the relationship between the players and designers, especially as facilitated by a wrangler. A wrangler is a player with an (incomplete) personal line of connection and communication with the designers. They are not a plant and are still actively working to complete the ARG, but they allow the designers a direct point of contact with the players without fully breaking group immersion. Implemented correctly, this can be a vital component to ensure that players are not straying too far off track or into material that is not related to the game. While we did have direct plans for a wrangler, this broader point prompted us to reflect on the relationship between player and designer. Ours, we knew, should not be one where we as designers impeded the player from completing the game, but instead posed an only gently antagonistic force while guiding players through the broader experience.
Technical and mechanical precedents

Given that ARGs are part of an uncommon, emerging medium, novel gameplay designs and technology usages which bolster accessibility or surprise players are abundant. The Disney Alternative Reality Game, an MQP designed by Julia Berg, Joseph Strong, and Dan Tennant, is one such example: their team sought to target an ARG design towards annual subscribers to Walt Disney World Orlando, arriving at a Muppet-themed ARG which would use a database for subscriber members to log in, register, and track their progress within the game, affording players a virtual identity which would map to their real-life one within the game's hybrid online/in-person format. Our team paid close attention to this option, as the ability to assess engagement and view player progression in real time was valuable. This would help us quickly realize when players were getting stuck and determine how best to adjust difficulty “on the fly.”

The Disney ARG utilized link-based rabbit holes that pointed towards a Muppet webpage that would serve as the start of the ARG. These links would feature at the bottom of emails and advertisements sent to subscribed users. Other designs included near-field communication (NFC) and short message service (SMS) avenues of delivery; their team found NFCs and similar technology to be obstructively costly, but gave consideration to an SMS service due to it being free and easily accessible to most people. We drew inspiration from this link-based avenue of delivery due to its simplicity and widespread ease of recognition; while we considered the use of an SMS service and NFC, our game’s reliance on web services rather than text messaging or in-person landmarks rendered these two options irrelevant to our design.

Some ARGs have fused novel gameplay with technologies such as these to great effect. Urban Codemakers: Decompiling the Player is a paper by Steven Conway and Troy Innocent discussing the philosophy and design of Urban Codemakers, an ARG in which users interact with physical tokens in their hometown in order to claim virtual powers. These physical tokens, which provide a link to a website granting the user special access to become an “Operator Player,” are key to the gameplay loop and effectively form a physical scavenger hunt proctored by a digital tool. Knowing that we similarly planned to develop an ARG with online and physical components, we initially considered implementing something physical into our ARG, such as a
token or NFC card for use by players; however, over concerns of poor weather and expense (fiscal or time-wise) to hide and replace these objects continuously, the idea was scrapped.

*Urban Codemakers*’ use of tokens is made additionally interesting by a competitive component. Each token redeemed by a player gives them *individual* points, on a tracked leaderboard, determined by the difficulty of the cashed token. This results in a solo competitive structure wherein players are incentivized to act in their own interests rather than those of a larger group. We were initially in favor of this idea as a way to promote friendly competition on campus, but after consideration we decided to alter -- and partially subvert -- competition as a concept. With our goal being to build community rather than drive wedges, we designed for in-person “competitive” games with intentionally arbitrary, confusing rules which encouraged players to laugh together at the game’s absurdity rather than focusing on their score.

**American Freeform as an inspiration**

In the article *Manipulating Environments in American Freeform*, Jason Cox discusses the features of “American freeform,” a subgenre of live-action roleplaying game (LARP) which demonstrates close ties to the core principles of ARG design. As defined by journalist Lizzie Stark, American freeform is “a style of rules-light, story-oriented, one-shot, live or semi-live (freeform) roleplaying scenario design”(Stark), to which Cox adds “it is light on props and costumes and is known for the incorporation of meta-techniques”(Cox). The loose definition of American freeform encourages diverse, novel experiences as participants with various levels of expertise incorporate elements familiar to them. This adaptability fosters an environment where players of diverse backgrounds and experiences assemble, much like ARG communities.

ARGs and American freeform, though distinct in nature, share several fundamental characteristics that contribute to their appeal as immersive experiences, chief among them being collaborative role-playing gameplay that fosters tight-knit communities of play. Within these games participants may reshape their identities on both communal and individual levels. Both kinds of game provide a stage for players to explore different facets of themselves, pushing the boundaries of communal bonding and self-discovery. Additionally, both American freeform and ARGs offer participants an opportunity to engage in experiences outside the boundaries of
conventional reality: players immerse themselves in scenarios where the extraordinary becomes real, allowing them to experience situations and emotions unattainable in their day-to-day lives. In American freeform, the conventional "magic circle" that separates the world of play from reality is frequently breached. This breach is also an important feature of Alternate Reality Games. In both cases, the line between fiction and reality becomes blurred, enhancing the immersive and transformative qualities of these experiences. To tap into this potential, we decided very early on that it would be prudent to capture everyday experiences -- such as WPI institutions, campus locations, and familiar symbols -- and attach fantastical meaning to them. This idea, while initially a core point of the design, later found usage in smaller forms.
Design

Having reviewed a number of precedents for inspiration, it became necessary to funnel our broad takeaways into one vision. The following summarizes these takeaways:

- Community can be built via encouraging players to subvert and “fight the game.”
- All puzzles are best built with possible player collaboration in mind.
- Disclaimers on project assets are necessary.
- Content pacing and difficulty must respond to players’ needs.
- Shared jokes and humor are key to bringing people together.
- Encouraging players to act as “themselves” in a story deepens connection to the narrative.
- Routine helps players find something to look forward to on a regular basis.
- We as designers must “get out of the way” and not make the game about us.
- We as designers should pose a gentle antagonistic force, but also be a guide.
- Difficulty must be tuned based on players’ input (overt or otherwise).
- Links provide an easy, accessible way to become part of a game.
- Competition as an idea can be subverted, and even mocked, to bring people closer.
- Symbols players see every day can be captured and given fantastical meanings, creating memories and associations that will last past the end of the game.

High concept

One of our main goals when designing the elements of Comroddity was for them to stick in our players’ minds. We wanted to enhance their everyday experiences with our fantastical narrative. Our team achieved this by weaving a web of symbols and experiences for our players to slowly uncover. The entry level of this web was our main website and daily questions. Players could answer simple daily questions that would have a chance of appearing in what became the center of our web, the game show. The game show showcased the wacky and confusing fun of Comroddity and led to yet another experience, the sponsors. Our fictitious sponsors and their websites rewarded players who made it this far down the Comroddity rabbit hole with complex puzzles they could solve collaboratively. These elements were held together by our icons and our pillars. Our icons, rubber ducks, a pattern of 3 eyes in a triangle, and toruses, were designed to
remind our players of Comroddity if they may encounter one of them in an environment outside our purview. The pillars, Buffoonery, Ingenuity, and Community acted both as our core design philosophies and the solutions to our sponsor websites. These elements formed an ARG that was designed to provide the WPI community with a low-stress and fun experience.

Design specifications

Our team had solidified the high concept for Comroddity, and it was now time to create the experience itself. We worked to create an experience for our players with many varied opportunities to engage with Comroddity as much or as little as they wished. These opportunities consisted of our daily questions, weekly tasks, sponsor website puzzles, and weekly game show episodes.

For daily participation all that was required of our players was to spend a few seconds to answer our daily questions. This consisted of players logging into our website and filling in the prompt on the main page (example in Figure A below). Some of these questions, along with our audience’s answers, were then featured in episodes of the show. This was done so players who were interacting at the lowest level still felt like they were a part of Comroddity. Additionally, we kept this daily task simple so players who were not interested or had no time were still able to participate without feeling pressured to spend more time than they wanted to.
Figure A: Example of a daily question prompt on the Comroddity website
Our weekly tasks were designed for players who wanted to take the next step into the Comroddity rabbit hole. These tasks were sent out through our Comroddity Instagram account and usually consisted of simple tasks such as the one seen in Figure B below. Players who either recorded or photographed themselves doing the task and sent it to us would then be invited to be a contestant on the game show. Unfortunately, we had no players become contestants on the show through this method, but we did get reports of players doing some of the tasks even if they did not send them in.

![Figure B: Example of a weekly task](image)

The next layer of interaction was the episodes of the game show. We released a total of 4 episodes, one each Wednesday from February 7th to February 28th (2024). The game show acted as the connective tissue for Comroddity; our daily questions were featured in the show, our weekly tasks provided a method for players to be contestants on the show, and the show introduced each week’s sponsor. Episodes of the show also highlighted the confusing and fun aesthetic of Comroddity. This was achieved by cultivating a lighthearted atmosphere when recording the show and encouraging our contestants to have fun with it (see Figure C). Additionally, the games were designed to be confusing, but fun. For example, in the second episode our contestants had to win the heart of our second judge, who was effectively a hand in a glove. The mysterious ‘Host’ figure was also meant to befuddle and amuse our contestants and
audience with her lighthearted mysterious manor and mask that she wore (see Figure D). Overall these episodes were designed to be the primary showcase of Comroddity’s confusing wackiness for both our audience watching the show, and our contestants in the show.

Figure C: The Contestants of Episode 3 of Comroddity laughing at a joke

Figure D: The ‘Host’ character, played by Madelyn Veccia

The sponsor websites were our final, most complex layer of interaction. Each episode of Comroddity, with the exception of the final episode, featured a sponsor with a matching website accessible from our main website. These three websites were home to hidden puzzles of varying difficulty. The first sponsor website, Buffant’s Institute of Clowns, had the simplest and least well hidden puzzles. This first website was designed this way to ensure as many players as possible
would pick up on the secret puzzles and be able to expect them in future websites. For example, the first letters of the names of the three clowns seen in Figure E spell out Buffonery. We then ramped the difficulty up for the second and then third sponsor websites to match our dedicated audience’s desire for a greater challenge. After completing each week’s set of sponsor website puzzles, players would uncover one of Comroddity’s main pillars. These pillars not only served as the solutions to our puzzles, but also were some of the main design principles of Comroddity. We chose this method so our audience could feel like they were slowly pulling back the curtain to understand what Comroddity truly was.

![Buffant's Institute of Clowns sponsor website](image)

Our layers of interaction were designed to encourage our players to engage with Comroddity at their own pace. While there were puzzles for our players to solve and mysteries for them to unravel, we strived to create an environment that prioritized low stress fun.

**Icons of the show**

We wanted our players to remember our show both during its run and long after it had concluded. We achieved this by focusing on icons during the show and heavily linking them to
our mysterious puzzles and narratives. These icons were rubber ducks, a pattern of three eyes in an equilateral triangle (See Figure F), and torus shapes such as donuts.

These icons were showcased in our websites, posters, and game shows. We had physical rubber ducks on the set of the game show and gave our players donuts before each recording. Additionally, these icons would be visible just in the background in our graphics and were even added to the background of our main websites as players solved each week’s slew of puzzles. This aspect of our main website also showcased to our players how each icon was linked to each pillar as they were revealed. Rubber ducks represented Buffoonery, the three eyes represented Ingenuity, and the donuts represented Community. We wanted our players to remember these symbols and how they were a part of the game show. This turned out to be successful very
quickly when a separate group placed many ducks around Fuller Laboratories and our group was asked if we were behind it.

Narrative threads

The overall narrative of Comroddity consisted of slowly unraveling the various mysteries we created for our players. The main mystery being of course our pillars of Buffoonery, Ingenuity, and Community. These values were not only the core of Comroddity narratively, but they were the core of our design philosophy. In the end our players were working to uncover the true nature of Comroddity, which was an ARG.

After our final episode aired, we invited our players to join our team in a final Comroddity watch party. This event was the final unveiling and allowed us to show our players behind the curtain and discuss the digital game show and learn how it impacted each of them. Our goal with this watch party was to provide our players with closure from the experience. In keeping with the atmosphere of Comroddity, we strived to have some goofy fun with this last event. As a final ritual we had our players attach a third eye to their forehead, eat a donut, and hold a rubber duck high while reciting the following: “I will instigate Buffoonery. I will utilize Ingenuity. I will foster Community.”

Design of the show

The actual game show of Comroddity was an experience designed to be just as fun for the players as it would be for the audience watching its episodes. One of the constants throughout all episodes of the show was our mysterious ‘Host’ figure (played by Madelyn Veccia). The host’s face was never shown, as to add to the mystery of Comroddity. Despite this innate mystery however, the host did strange things designed to make the audience laugh. Unserious mystery was not only a theme for the host, but for the other constants in the episodes, the judges (also played by Madelyn Veccia). The judges were simple gloved hands coming out of a curtain to give scores, wave to the audience, or do whatever was needed for the show. The sponsor of the show was the final element that provided mystery and comedy to the show. The host would announce this week's sponsor and that sponsor’s tagline. This linked the episodes of our show to
our website where players could visit the sponsor websites and solve the puzzles therein. These elements evoked the confusing and lighthearted atmosphere we wanted for the show and queued our contestants into that vibe.

The show featured three contestants who were tasked with playing the game of Comroddity. This game took use of the daily questions from our main website. The contestants were tasked with attempting to guess the most popular answers to these questions, but received more points if the answer was less popular than the others (for example, if a contestant guessed the 3rd most popular answer they would get 3 points, if they guessed the 2nd most popular answer they would get 2 points, if they guessed the most popular answer they would get 1 point). This rather complex scoring system was yet another wacky element to our game show, but was also designed to prompt our contestants to engage in banter and make comments. This was an element of the show we shifted to encourage more in the later episodes as we refined our process and became a core element of the show. The final element of the show was the final game where the two remaining players faced off to win the episode. These games were more in depth than our questions and had our players taste testing water, romancing judge two, speed drawing, and racing across campus. We strived to make this part of the game show especially fun for the contestants.

**Surfacing themes through sponsors**

The sponsors and their websites were our path to uncovering the three pillars over the course of the first three weeks of the game show. These websites surfaced the three main pillars (see Narrative Threads), through both their visual design and puzzle design.

The visual design of each website showcased their respective pillar through colors, text, and the perceived quality of the website. The first sponsor website, Buffant’s Institute of Clowns, was designed to appear low quality but colorful to reflect the pillar of Boffoonery. This extended to the text with, for example, fun clown based courses, professors, and mission statements. The second website Small Town Equity Management was designed to appear much more like a real website. We surfaced the pillar of Ingenuity by hiding small easter eggs, unrelated to the puzzles, for our audience to find on the website. The final website, Springfield Bovine Festival, was designed to appear quaint and goofy to reflect a tight knit community. We further surfaced the
theme of community by including WPI campus as a part of this website to remind players of the greater community they are a part of.

The puzzles in each website were, like the visuals, designed to emphasize our three pillars through their design. In addition to our pillars however, these puzzles shifted to meet our players’ demand for more complex puzzles and grew more difficult over time. A good example of this is our first sponsor website which had many puzzles embedded in it that all directly lead to the word Buffoonery without a need to solve all that was on the website. These first puzzles were also designed to make players laugh and reflect Buffoonery. From there, the second website, reflecting Ingenuity, had our players making connections to time stamps in our episodes and looking for small codes in large images. This website, due to its more realistic appearance, really forced players to search for the puzzles. The third website had our players join a community in order to solve the puzzles and utilized a map of WPI as a part of one of its puzzles.

These websites, like the rest of the show, were designed to be fun to interact with and further emphasize our three pillars. They additionally provided a deep and more time consuming method of interaction than the other aspects of our show. This managed to get our players talking and working together to solve the various puzzles. Overall these websites were successful in strengthening the bond between our players and Comroddity.
Implementation

Comroddity was a large-scale project that required a proper division of work in order for the game to be built in time for deployment. Our team saw many changes in our work structure over its lifetime due to us producing a wide variety of deliverables that required input from all members, including a main web application for contestants to interact with, sponsor websites that had puzzles hidden all throughout them, multiple social media accounts for our players to interact with us, and weekly videos that made up the core of Comroddity’s experience. All of these were interlinked to provide a fulfilling experience to Comroddity’s player base.

Technical and narrative teams

We split our work into three major components: technical, narrative/art, and design. Our initial distribution of roles saw all members of the team at least partially “on design,” as all members were interested in creatively contributing to the project’s gameplay direction, while technical and artistic components were split placing the three members majoring in Computer Science and/or IMGD Technology on the technical team (or “Tech Team”) and all three members IMGD (BA) students on the narrative/art team (or “Art Team”).

Tech Team was responsible for developing and maintaining the game’s web presence, including structuring UI interaction, website hosting, and management of players’ input data. To this end, the team’s primary deliverables were the Comroddity web application and several sponsor websites. Art Team would meanwhile handle the development of the game itself, including the game show’s gameplay design, all puzzles, and all video assets such as episodes of the show. Art Team would additionally take initiative developing styling guides for all game sites, providing Tech Team with useful reference on the desired visual language of each.

Project management

As our ARG would require an extended period of time to run, it was imperative that work was divided carefully between our four available terms. We ultimately settled on the following distribution for our workload:
1. A Term: Primary focus on background research on precedent for ARGs that had run in the past, conceptual designs for puzzles, and deciding a theme. We also used this term to write our proposal, which centered around sources of inspiration, ARG design, and our team’s vision for this project.

2. B Term: Initial development on the game. Art Team focused on the game’s structure and planning; we went through several iterations of gameplay, ultimately deciding on a *Family Feud*-style format for our in-person game. Tech Team focused on the creation of the initial prototype application that would be used throughout the runtime of the game, including deploying it on WPI’s Virtual machine. B Term was also host to Alphafest wherein we anonymously ran a prototype of our game show format to begin establishing a presence for our ARG.

3. C Term: Runtime of Comroddity. The Art Team created weekly sponsor website designs in Figma and edited together episodes of the show, while the Tech Team worked on the development of sponsor websites while tweaking the main application. The entire available team attended episode filming sessions, hosted each Saturday. While this term was initially intended to be solely dedicated to running an already-complete game, many game assets were delayed to the point of being created during C Term.

4. D Term: Creating and refining our official project report. In addition, we modified the website for its legacy preservation to continue running on WPI’s website.

**Shifting project work structure**

In the advent of B Term, when we first began the initial development of our game, we wanted to create a form of organization that would be useful for us to constantly update each other due to the heavy divide between Art Team and Tech Team. On the first day of the term we created a team Discord server in order to facilitate communication between the Tech Team, the Art Team, and advisors. This proved to be mostly successful as it allowed ready communication within our team.

Another proposed organizational avenue was the Trello app, which would have allowed us to post tasks that needed to get done and assign members to those tasks. It proved useful at first, as it allowed us to distribute important tasks between the Tech and Art teams that relied on
one another, but as time went on the Trello saw diminishing use as we stopped updating necessary tasks as we neared the launch of our game in B Term. At that time, we shifted fully towards using the team Discord server for communication.

Come C Term and the need for game show asset development, the need for communication between Tech and Art teams grew. As such, we moved into more specialized programs to support this need, the primary one being Figma. Using Figma the Art Team was able to create detailed mockups of sites for development, including hidden details such as puzzles and proposed hint content. Tech Team would then set out to develop these sites as described in the Figma. Due to the fast-paced development cycle of C Term, however, interruptions to our schedule were frequent. For the second sponsor website, *Small Town Equity Management*, Tech Team was unable to complete puzzle implementation on schedule due to a delayed Figma mockup. As such Art Team agreed to provide the files earlier for the third and final sponsor website, creating a much more manageable distribution of work for Tech Team.

In D Term, we set about finishing the paper beyond the proposal draft we had written. The two team members contributing to our MQP as an independent study project (ISP), Renee and Vijay, were no longer on the project, so we divided up the work between the four remaining students. We sectioned out the paper and each of us selected a roughly equal amount of sections based on our familiarity with the topic throughout our MQP process.

**Producing the game show**

**Production schedule**

Our weekly production schedule for the runtime phase of our project centered around two major recurring commitments: the recording of a new episode every Saturday, and the airing of the edited episode every Wednesday at 12pm.

Each recording session followed a similar format. All available team members would arrive an hour before the start of filming to dress the set (an empty classroom in the basement of Salisbury Laboratories) and prepare the cameras and games, the three participants selected for the given episode would arrive at the start of filming, and shortly after their arrival we would
begin the game and record the raw footage for the episode. As a courtesy, our team would provide a box of donuts each session (at no charge) for participants to take from if desired.

Madelyn took the role of our “host,” the masked face of Comroddity who would ask participants enigmatic questions and introduce each game. Renee assisted with changing out items when needed between games, such as providing participants with paper and a pen as required. The remainder of our team served as off-camera judges, deciding winners in subjective response games and tallying point totals to ensure that Comroddity would run without interruption to count scores. On a few occasions one or more judges would act as camerapeople, actively recording contestants participating in an event.

The full footage from these sessions was then provided to our video producer, Renee. Renee was fully responsible for editing each episode, condensing each Saturday’s footage into a roughly ten minute video ready to be broadcast on Comroddity’s official Twitch account the following Wednesday at 12:00 P.M. This left Renee with an exceedingly short turnaround time per video: fewer than four days from Saturday afternoon to the following Wednesday morning.

To broadcast these episodes, Justin developed batch files to automate the streaming process for the game show. Programmed to initiate a Twitch stream at a specific time, these scripts were developed to retrieve a media file from an off-campus desktop computer, open a stream every Wednesday at noon, broadcast the contents, and then shut down the stream. This eliminated the need for a team member to run a stream from their laptop during a class or other engagement, ensuring a stable bitrate and no need to manually handle the broadcast.

Contestants

Our original project design called for contestants to be invited from the pool of most active weekly challenge participants on the Comroddity Instagram page, as we suspected that these particular ARG players would be on average more engaged, energetic, and interested in appearing publicly. However, a marked lack of interaction with this page (see Social media presence under Campus publicity) would require us to completely overhaul this aspect of our gameplay as a sufficient number of participants could not be sourced.

The solution we ultimately decided on was inviting interested friends and acquaintances as game show contestants instead of ARG players. This fundamentally changed our design as the
project began. While our ARG participants still contributed the answers used to seed each episode, the episodes themselves instead featured hand-picked WPI students who were “in on” the project and agreed to assist our team. Despite divulging the project to these selected contestants, our team otherwise still maintained our own secrecy, including requesting that contestants keep our identities hidden until the ARG had concluded, and contestants were never made aware of selected questions, games, or sponsor details until revealed during filming.

One outlier to this formula arose in the very first episode: due to the time and audience constraints around starting the ARG, we opted to have one of our own team members, Vijay, as an active participant in the game. Though he began with more background on the game than his fellow contestants, his participation was beneficial: understanding the team vision, he helped set an initial tone of energy and lighthearted fun which other contestants were quick to match.

Despite all contestants being selected from outside our pool of participants, we rigorously ensured that all consented to appear on our broadcast, VODs, and -- for participants in the final “All Stars” episode -- posters. Our game show consent form, written in early C Term, served as the baseline for this protocol (see Consent under Working with the WPI Institutional Review Board), including clarifying every contestant’s right to decline to play or to request (within 3 months of publication) the removal of their voice or likeness from any VODs featuring them.

**Technical implementation**

**Main web application**

We developed an official Comroddity web application as a “central hub” or nexus for new and returning players, as while platforms such as Instagram, Twitch, YouTube, and Discord (discussed below under Other web presence) served to build a public presence, a media archive, and a framework of player-to-player communication, our need for tracking responses, broadcasting episodes at a reliable location, and linking to sponsor pages in the narrative required a novel platform tailored to the needs of our game. Though technically rigorous to develop, this solution came with the benefit of being fully customizable and allowing us to immerse players to an extent which an existing platform would otherwise have not been able to: the Comroddity app was our own creation, it existed purely in service of our alternate reality, and
it was under our direct artistic control, allowing us to create immersive visual aesthetics and built-in narrative elements within our own digital “magic circle.”

We selected the ReactJS library as the foundation for the app, choosing it on account of our team’s prior work experience with the framework and its capacity to create easily structure procedural and animated visuals; anticipating the need to style and populate dynamic collections of content such as videos and banner links, it seemed the most intuitive option to avoid the need for complex client-side Javascript or server-side code to assemble dynamic app pages with live interactive elements. Once developed, our team deployed this app on an Ubuntu virtual machine provided by WPI’s Academic & Research Computing (ARC) team, hosting it at the location comroddity.wpi.edu on the campus network. The affordances of this app included:

- **Answering daily questions** on the homepage with a brief text response. Each user could only respond to a given prompt once.
- **Viewing live broadcasts of new episodes** on a weekly basis, by way of a Twitch embed linking to the Comroddity Twitch account. This included an indicator icon in navigation which would communicate whether the stream was online or offline at a given time.
- **Viewing past episodes** as recorded videos hosted on YouTube.
- **Visiting sponsor websites** (see Sponsor websites below), either via the Our Sponsors page containing all past sponsors, or via the Show Room page displaying the sponsor ad for the latest episode.
- **Guessing sponsor pillars** on a secret Pillars page, the discovery of each of which would unlock subtle background graphics. Near the end of the game, the discovery of all three would unlock one final secret: the details of the final meet-up to close out the show.
- **Reading help information and FAQs**, both of which were intended to assist new players in joining the game.

To handle this set of needs, we developed a collapsible, mobile-compatible navigation bar with a set of tabs which mapped to the above for a total of seven pages. The tab for pillars was unique: using browser localStorage, we would track whether a user had visited the page before -- initially accessible only as a hidden FAQ link -- and only populate the tab if it had been found. In this way, this tab uniquely served as a shortcut and quality-of-life feature.
Additionally, while prototyping a poll system on our virtual machine, the need for a RESTful API to accept responses from players became apparent. As the majority of the development team had taken a course focused around Express.js, and our requirements called for a lightweight and easily expandable set of calls with server-side user authentication, the framework was a natural choice for tying together the Comroddity backend. This API was hosted on the same machine as the Comroddity web application. Once deployed, our team integrated this API with an Auth0 application furnished with a secure cloud database connection for handling user credentials; while we had initially considered building our own login solution from scratch to avoid using a third party, because none of our team had prior cybersecurity experience and we needed to ensure that data would be properly encrypted, we chose Auth0 as a reliable off-the-shelf login solution. As an established provider, Auth0 also came with the benefit of accessible middleware for server-side user authentication, allowing us to easily associate users with their input and filter out any request without a valid access token in the header.

Storing users’ responses and progress, as well as miscellaneous web application data such as VODs and daily questions, necessitated databases of our own; as such, our team made use of NoSQL cloud databases provided by MongoDB -- one each for site data and survey responses -- avoiding the need to maintain a database on our own infrastructure. We associated the latter database with user IDs provided by Auth0 rather than storing direct identifiers such as email addresses, allowing data to be easily detached from the original users upon the purging of the Auth0-provided database. API calls defined within our Express.js server were used to interface with our MongoDB-hosted databases, including retrieving site data and consuming prompt responses, thus establishing this server as the central pathway for all backend functionality.

To test all of the above infrastructure we developed a proof-of-concept sample applet with a singular puzzle and a set of survey questions for use by attendees at IMGD Protofest. (See Protofest and Alphafest under Campus publicity for outcomes.) This test brought to light a few problems with our configuration, one of which we would not discover the cause of until later: the requirement for users to be connected to the WPI network to access comroddity.wpi.edu, and a network bug blocking mobile device access exclusively on WPI’s network. (See Maintenance below for outcomes.)
Sponsor websites

In order to provide a gratifying experience for players seeking more involvement with the ARG, our Art and Tech teams worked in tandem to design and implement sponsor websites rich with optional puzzles for players to explore. Upon the airing of each of our first three episodes we would make public a new sponsor website, each corresponding to a new unlockable narrative “pillar.” The following sites were released during the game:

1. *Buffant’s Institute of Clowns*: A website narratively themed after a clown college, with puzzles revealing the pillar of **Buffoonery**.
2. *Small Town Equity Management*: A corporate-styled website for an “equity management firm” laden with absurd jargon, with puzzles revealing the pillar of **Ingenuity**.
3. *Springfield Bovine Festival*: A website advertising a fictitious festival celebrating cows, with puzzles revealing the pillar of **Community**.

The development process for these websites called for close and fast-paced collaboration between our art and development teams: Art Team would develop fully fleshed out UI designs using Figma, including page layouts, font sizes and styling, relevant images, and mockups of puzzles, and once these specifications were complete members of Tech Team would construct the site to match the specification using all available time until the next episode airing. Due to the fluidity of our Art Team’s vision, final mockups would often arrive within a week of the deployment deadline, necessitating brisk development work; on occasion, Tech Team would provide advice and revised specifications, scaling down ideas that could not be completed within the allotted time.

In order to maintain structural simplicity and achieve a charming “static webpage” flow of interaction, the websites were written purely in HTML and CSS without any additional frameworks. While ARC provided access to official WPI web infrastructure as an option for hosting, Tech Team opted to instead host each website via Google Cloud Hosting and purchase an external .com domain matching its name, reasoning that this would provide an immersive experience by establishing the sponsors as organizations separate from WPI in-universe.

The developed sponsor sites were never a “one to one” match with the provided Figma mockups — on account of the time constraints, some design elements simply had to be cut
completely, such as some of the more complex dynamic puzzle concepts or animated components of the visual layout. Despite this, Tech Team ensured that each sponsor website fulfilled the broad vision of Art Team and encoded the correct pillar through its puzzles.

Other web presence

Comroddity’s additional web presence took the form of a Discord, an Instagram, a Twitch account, and a YouTube page. Respectively, these platforms served the ends of:

- Affording players a central location to communicate and collaborate.
- Advertising Comroddity and (in our preliminary design) engaging with prospective game show contestants.
- Broadcasting a new episode of the game show every week.
- Hosting videos-on-demand (VODs) of previous episodes of the show.

We integrated all four of these pages within our central Comroddity app. For Discord and Instagram only a pair of links in the Comroddity app footer were required; our two video platforms were meanwhile integrated as video player embeds allowing viewers to consume the game show without leaving the app (i.e. via the Show Room and Previous Episodes tabs). While early in the development process we had considered the idea of building a proprietary video storage and distribution system tied to our site content database rather than relying on the services of YouTube and Twitch, we reasoned that it would be best not to “reinvent the wheel” when off-the-shelf solutions were readily available and our team resources were limited.

As well as giving players free reign to discuss puzzles and muse about the ARG, the Discord served as a strong system for developer-to-player communication as the need arose. Using accounts disguised as hosts to maintain our team’s anonymity, we would occasionally help stuck players by passing them hints in Discord and making public announcements as technical issues arose (see Maintenance below). While bulletins on the Comroddity app served these two ends somewhat well, we found direct intervention via Discord to have a threefold benefit:

- Adding new information and alerts to the Comroddity app (other than to dynamic content already defined in our database, such as prompts and VODs) was time-consuming and
required a full React rebuild/redeployment, causing severe delays. Discord messaging was instantaneous.

- Within Discord, our team could partition messages between different in-game character accounts, establishing unique purposes for each -- e.g. a host account for announcing new game developments and a maintenance account for alerting players to delays and outages.
- By way of maintaining a distinctive, amusing voice for each of these accounts, all emergent situations could be addressed “in character” and improvised as part of the game rather than damaging immersion.

For a detailed overview of the role of the official Comroddity Instagram, review Social media presence under the section Campus publicity.

Maintenance

One of the key obstacles during the runtime of Comroddity came in the form of technical difficulties. Due to a somewhat back-loaded design/development schedule leaving a lack of time to “stress test” newly-implemented app functionality, deployed sponsor sites, and network behavior, many issues were discovered near or following the beginning of the game. The challenge was twofold: it was important both that issues were repaired and that players remained informed and did not have their immersion damaged by unintended technical hurdles.

Just prior to the first demo involving our first prototype web application (see Protofest and Alphafest under Campus publicity), we encountered and resolved a minor firewall configuration bug requiring users to be connected to the WPI network in order to view the app. However, we did not discover our second network bug -- one which would go on to become our most pervasive issue -- until during this demo, when nearly all users accessing the prototype app found that they could not submit form responses. While we diagnosed it at the time as an API connectivity issue, it would take until midway through the actual runtime of Comroddity for the problem to resurface and demand further research, at which point the behavior was discovered to specifically occur on mobile devices connected to the WPI network. After extensive discussion with ARC and analysis of internal UFW logs on the Comroddity host machine, it was determined that an edge-case WPI firewall bug related to MAC address randomization and the use of a port
other than 443 for listening for API calls, in our case 8443, was the culprit, and ARC assisted us in remapping calls from 443 to 8443 via ProxyPass to rectify the behavior.

The final access problem to arise during the game concerned our final sponsor website, Springfield Bovine Festival, which was deployed only shortly before becoming accessible to players and was automatically blocked on the school network due to suspicion of it being an untrustworthy site. As the block was never lifted and the WPI IT Services ticket concerning this flagging is, at the time of writing, still “In Progress,” our team rapidly moved to re-host the website at a subdirectory of our first site, Buffant’s Institute of Clowns, and communicated the change to players in order to ensure they would be able to complete the final pillar of the ARG.

During the course of difficulties such as these, our team maintained a presence on Discord in the form of an account named “COMRODDITY IT SPECIALISTS,” an in-game character which would report (and humorously embellish) maintenance updates, establishing levity and light immersive elements around otherwise frustrating interruptions in game access.

Ending of Comroddity

In order to round out the Comroddity ARG as a hybrid in-person and online experience, our design called for a final gathering, with food provided, open to all players -- so long as they watched the final broadcast and managed to solve all three of the game’s pillars to discover the final time and location. The agenda for this event would see our team reveal our identities as developers before playing a rerun of the final episode alongside some cut content and commentary from our team, taking photos with our players, playing an impromptu round of Comroddity with unused questions, and interviewing them about their experience with the ARG.

One major interruption to this plan occurred as a consequence of the short notice of the final website, combined with technical difficulties delaying its accessibility on the WPI network (see Maintenance above). In order to accommodate players who were unable to complete the game by the original event date, we ultimately delayed the gathering until finals week; as a result our event participation was lower than anticipated, with only our past show contestants and a single independent pillar-solver in attendance. The event otherwise proceeded as planned on the afternoon of February 28th, 2024, with the caveat that our interviewing phase was cut for time.
Directly following this event we posted an announcement on Discord notifying players that the game show and ARG had concluded. After the end of the term, we released a follow-up announcement including debrief information and a link to a final feedback survey. While only a few players responded, their feedback was valuable in assessing the strengths and weaknesses of how the Comroddity ARG ended. (See User engagement and User feedback under Evaluations.)
Working with the WPI Institutional Review Board

While approval of playtesting procedures by the WPI Institutional Review Board (IRB) is a common requirement for MQP projects developed by the IMGD Program, the process is generally streamlined due to the minimal risk to participants associated with playing a tabletop or video game; Comroddity, however, faced a number of roadblocks during this procedure due to its nature as the first MQP-scale ARG ran and published in a report at WPI. A combination of our own inexperience in working with the IRB and the nebulous terminology surrounding ARGs at large led to a protracted discussion in which our project’s risk was mitigated and our runtime procedures were documented in much greater detail.

Despite the conversation between our team and the IRB beginning during B Term, it took until the beginning of C Term for us to begin formally submitting materials; this led to a tension between our planned runtime schedule and the IRB’s need for time to review our case. Though we maintained close communication with the board during the early phases of submission, as the term continued (and in light of stressors such as late development crunch) we failed to maintain timely, continuous contact regarding new developments. The core challenge of this process was clarifying the core goals of an ARG -- keeping the developers anonymous and maintaining audience immersion in an entertaining, fictional variation of the real world -- while maintaining the standards of academic research.

“Deceiving nature”

As the word “deception” came up frequently when planning out our first-pass game plot, it became an ongoing talking point amongst ourselves and with the IRB. Deception, according to the IRB, denotes that there are potential risks that the participant in a study is not made aware of. This slightly misaligned with the definition used in the context of our narrative: hidden or “dishonest” plot points, such as the conceit of a game show belying a secret puzzle game, which add richness to a game design but do not endanger players. Deception is an important consideration for projects with physical or psychological effects; Comroddity was meanwhile simply a game keeping temporary secrets for entertainment purposes. The only “deceiving” elements of its nature were how its advertising framed it as a simple online game show, rather
than as a broader ARG with optional puzzles for players to engage with, and how we as designers sought to hide our own individual identities until the game was over.

Nonetheless, finding a resolution to the concern that Comroddity was a deceptive research project took multiple weeks. Discussion with Ruth McKeogh about our ARG indicated that we were treading in a gray area of the rules which IRB terminology struggled to categorize; however, after Justin (accompanied by advisor Melissa Kagen) clarified some of the finer points of ARG design to the IRB, it was determined that our game concept was not harmful so long as we stressed that players could choose to stop participating at their own discretion. Following this discussion, our team was cleared to maintain our benign narrative “deception” provided we furnished the ending of our ARG with an appropriate debrief (see Required materials below).

From our team’s perspective, this confusion between deception and immersion stems from a broad discrepancy between IMGD’s lexicon and that of academic research. While publishing any MQP project requires a strong degree of academic rigor and precision, IMGD projects, by their nature, have an artistic element. As a work of fiction, a game project may weave stories laden with “deception” and amusing lies, but these are all with the intent to entertain an audience who, by taking part, chooses to suspend disbelief and engage with what they consciously know is a fabrication -- in the words of Melissa Kagen, one of our team’s advisors, “the whole point of an ARG is to not say ‘it’s an ARG.’”

With this guiding quote in mind, we faced a challenge designing our ARG to be both immersive as a game and valid under the accepted definition of research. These two goals contradicted each other and necessitated a middle ground, as assessed further in Consent below.

Consent

During the course of our communications with the IRB, an additional concern came to light: informed consent. Due to our categorization as a research project for publication, it was expected that players participating in our ARG be provided a comprehensive breakdown of the risks of participation in our game, including conveying that the ARG would be entirely optional, and that players could join and leave as they pleased. This was complicated by our initially bifurcated game design, where players were given the option to participate as a remote viewer submitting answers to a daily question, an in-person contestant on a recorded game show, or
both. The immediate challenge presented by this was how best to target our consent workflow to players assuming different categories of risk -- in either case, all while maintaining immersion.

For simplicity, our first draft of this workflow saw a full digital consent form provided to all prospective players joining the app, in which a full breakdown of risk was provided including both collection of responses (to be later de-identified) and the possibility of, with permission, being recorded as part of an in-person event later edited and broadcast via Twitch. While comprehensive, this solution was cumbersome in length, impersonal, and detailed to the point of spoiling major mechanics of gameplay. It was also, according to the IRB, not necessary in such a tedious form as we would find out a short time later.

Once it was clarified that only a subset of players would be reached to ask about recorded in-person participation, we were approved to separate our consent workflow into two modules: a proper consent form for game show participants detailing game risks and use of footage, and a brief, accessible advisory for online players indicating that they were entering a “designed experience” and outlining the handling of responses and identifying information. This was a largely welcome development as it assisted us in reinforcing one of our core experience goals: a low barrier to entry, facilitated by an easy and human-readable intake process.

Despite this positive outcome, our team has since reassessed how effectively we balanced the core needs of an ARG and of research. Ultimately, our compromise sacrificed a core ARG value: we “broke the illusion” as our player advisory partially disambiguated the hidden portion of the game, revealing the game as a student project rather than just a game show held at WPI, and implying the existence of hidden game mechanics. Depending on the strictness of one’s definition of an ARG, this is a severe infraction within the medium; in general, maintaining immersion requires a smooth transition from reality into the game’s alternate reality, facilitated by a plausible (yet obviously fictional) intake process. Placing a boldfaced advisory in front of players which, in essence, warns them that they are about to play an ARG infringes on this immersion, and is a severe blow to any project of this kind.

Our team does not purport to know the “right answer” to how to straddle this line between research and immersion, other than to say that our solution, while expedient, required the sanctity of our ARG to be compromised in a small yet critical way. The tenets of research
safety are important, but so too is immersion in the context of an ARG, and the strictness of these two needs demonstrate a contradiction which is yet to be fully resolved.

Required materials

To ensure the safety and transparency of our research practices, the IRB required us to share all materials which would be presented to players as well as document our game practices. The first of these was our feedback survey, chiefly due to its use as a debrief for the ARG; this was critical due to the potentially misleading nature of Comroddity and would fully inform players about the game following its conclusion. The IRB additionally requested a few resources detailing how Comroddity was to run, such as “Game Show Protocol,” a document that went in-depth on how players would interact with our site from beginning to end. This document contained information such as how students would learn of Comroddity on campus, our planned event schedule for the game show, and our methodology, which primarily stated we would be engaging in active observation of our players. Other requested materials included flyers for the game show, a list of planned prompts for the main app, and the list of tasks that would be posted on our Instagram. Eventually, once the game’s low risk was clarified, many of these materials were decided to not be needed. We urge future teams to pay attention to materials such as flyers, a debrief form, and possibly a player advisory or consent form; in our experience the debrief form was most important as it retroactively informed players of the game’s true nature.
Campus publicity

An alternate reality game requires players and an audience. This task proved to be a difficult one and we undertook many methods of advertisement on WPI campus. Each method had varying success, but were successful in securing a number of dedicated players of our show. The first place we advertised was at the IMGD-department event called Protofest. We opted for a non-human presence at this event, simply placing a blank board up with a QR code. We learned that this method was not very effective and switched gears for the next advertising opportunity at Alphafest (another IMGD-Department event). At Alphafest we did have a human presence and allowed people to play the game of Comroddity. This proved much more successful. As we began releasing elements of our ARG we placed posters around campus and created social media profiles for Comroddity. These proved to be relatively effective, but didn’t provide us with the numbers we wanted. Finally, we explored other advertising methods. One of these methods, table setting, proved very successful, but the revelation came very late in the run of our ARG. This experience taught us the value of dedicating team resources to advertisement and illuminated which methods worked, and which methods did not.

Protofest and Alphafest

Our group participated in the large-scale IMGD-department hosted events, Alphafest and Protofest. These events served as valuable feedback for our goal of acquiring players towards our event.

In Protofest, the demonstration we chose to go for was an unmanned, enigmatically designed poster board that had a hidden QR code on it in order to create an air of mysteriousness surrounding our game. The QR code led to a spooky-themed survey that attempted to gather how interested students would be in our game. A few of our team members attended the event in order to monitor the progress of our demonstration, and unfortunately, we quickly realized that people were not very interested in a display such as this. Even after revealing the QR code, not many people were interested in scanning it. The final straw was that the survey had some technical issues with students who were on WPI’s network at the time, an issue that would not be
solved until D Term. Overall, our display at Protofest did not gather as much attention as we had hoped, but it did inspire how we would change for our future debut at Alphafest.

At Alphafest, we instead opted for a more hands on approach, with a member of the team sitting at a table wearing a mask so as to not lose that similar mysterious air we were going for. They interacted with others, gauging interest in the style of gameplay through asking questions in the style of the game show *Pointless*, which was similar to what our game show would play like. Overall, this display gathered a lot more attention and was more successful overall.

**Poster design**

To spread the word about Comroddity, we designed posters as one of our forms of advertisement. These posters were designed to be eye-catching and reflect the themes of Comroddity. The poster features the Comroddity logo as well as the color pallets and design style featured in our main website, Instagram account, and show episodes. It features 3 podiums representing the 3 contestants in each game show episode. At the bottom is information about when the episodes air and a QR code link to our main website. The design of the posters includes dark blues and rich reds designed to evoke regal themes. This regal design, which our team referred to as “velvet,” can also be seen in the pattern of the background as well as a similar design in the podiums. This regal theme, meant to impress the secretive and unknowable nature of Comroddity, is then undercut by the red and white slanted rectangles which reflect Comroddity’s more silly elements. Finally, silhouettes of ducks can be seen barely visible in the background of our poster as a nod to one of Comroddity’s main icons.

In addition to our main poster we designed a poster for the final episode of Comroddity. This poster differed due to its inverted color pallet and images of the 3 final contestants. This poster was designed to be similar enough to the original to be recognizable, but different enough to catch the eye of someone who was already a fan of Comroddity. These posters, as well as the main posters, we advertised all around WPI campus. We focused on areas in and around where we knew Interactive Media and Game Design (IMGD) students would have classes as they were our target audience. Additionally, we gained the assistance of IMGD staff to distribute our posters during classes and on campus events.
These posters proved to be adequate at their jobs of advertising and gave us a blanket unobtrusive way to get the word out to all parts of campus. Aside from advertising on their own, our goal with these posters was to allow them to augment other methods of advertisement so that, if someone had heard of our game show through other means, they would be able to easily find information about it.

Social media presence

In our efforts to advertise Comroddity we created accounts and spaces for the social media platforms Instagram and Twitch. Our Instagram was our main method of sharing the weekly tasks of Comroddity (see Appendix E for a full list of these weekly tasks). In our posts we specified that anyone who did the weekly tasks and sent us pictures of them doing so would get a chance of participating in the show. Unfortunately we were not able to build much of a following in time for this to happen, but the posts remained on the page for anyone to reference later on. We also decided about a week into the show’s run to post the daily questions to Instagram in order to promote them further. These posts had links to our website where players could answer said questions and learn more about the show.

These methods of advertising had varying degrees of success. The Instagram only gained around 15 followers by the end of the show, but it succeeded as a visual timeline of all of the progression of daily questions and missions that comprised Comroddity’s four-week runtime. Overall both platforms were useful to us and allowed us to promote the game show, but our audience had an obvious preference that we were able to make use of.

Other methods

As Comroddity was running we pivoted to promote the show more through new advertising methods. The first of these methods was creating a digital poster for the screens located in the Fuller Laboratories building on WPI campus. As mentioned previously, we focused our advertising efforts to areas of campus where we knew IMGD students would have classes. This was why we chose Fuller Laboratories as it houses many IMGD classrooms as well as all IMGD professor offices. The second advertising method we took up was table sitting in the
last week Comroddity was running. While we were only able to table sit for a total of 2 hours in the last week of the game show, we were able to hand out miniature sizes of our posters to 4 interested people.

When initially advertising Comroddity there was some confusion with a weekly event in the IMGD community on campus, the Colloquium. This event takes place at noon on Wednesdays which happened to be the same time that we were releasing episodes of Comroddity. Initially, our team leaned into this concept. We knew IMGD students were our main target audience and thought this might be a good way to advertise to them directly. In the end however, many students assumed they would have to miss the weekly Colloquium meeting to engage with Comroddity. Many students, after Comroddity was concluded, expressed that they would have participated if they had known the truth about the episodes airing at the same time. This shows that keeping marketing simple is paramount successful advertisement.

Advertising our game show proved to be a lot more difficult than we anticipated. Our own busy schedules, along with the busy schedules of the WPI community we were advertising to, created a situation where we ran out of time to create as big of a following as we had hoped for. These additional advertising methods show that promoting something like an online game show favors the quantity of advertisements overall.
Evaluations

Comroddity’s design went through a variety of changes throughout many iterations. Much of our initially brainstormed content was cut or altered in order to fit a more practical format for a campus-wide ARG, or to fit the requirements of a research project as deemed by WPI’s Institutional Review Board. Comroddity’s reception by players was mixed, with players enjoying some aspects of the game such as the daily questions and the puzzle solving, while others such as weekly Instagram tasks and our finale were enjoyable to some players. However, the experience of running Comroddity remained deeply insightful -- especially concerning the IRB approval process, player feedback, and the best means of engaging with users.

Cut content and changes from original design

In light of gameplay design which was still evolving even as the game neared its February runtime, the rich ideation process of Comroddity resulted in many ideas which later needed to be adjusted, reworked, or cut entirely. This was exacerbated by our team-oriented approach to brainstorming in which each member would contribute a text slide detailing their own response to broad design questions as they arose: for instance, when assessing the best other games to use as inspiration, what could be learned from WPI project precedents, and even deciding the overarching genre of our game. The major upside of this process was that each member was able (and expected) to contribute to idea generation and the project’s creative direction; the downside was that combining so many concepts into one coherent vision meant some could not show through clearly in the project’s end deliverable.

One of the earliest broad concepts for Comroddity as an ARG involved a “broadcast” which would run -- without stopping -- for the entire duration of the game, as if a live TV channel or mysterious alien signal. Our team mused with the premise of a character “trapped in the broadcast” or a similar plot hook that would lead players from initially using the broadcast as a source of up-to-date game information, to questioning or distrusting it, to finally at the end of the game uncovering its true nature and possibly shutting it down. This idea posed opportunities for emergent gameplay and unique participant journeys, such as by opening up the ability by players to influence or temporarily hijack the broadcast with their own content, or serving as a
rolling intake system for players joining the game anytime during its run -- the broadcast could provide a scheduled introductory sequence every day or every hour, allowing new players to quickly catch up on prior progress. Despite the wealth of possibilities, our two explored avenues of implementation posed logistical challenges:

- Finding a space available to literally livestream nonstop was infeasible.
- Producing an interactive, looping stream that would run off of pre-recorded footage was prohibitively difficult and would require a large volume of video content to be created.

With these issues in mind, we recontextualized the broadcast into a facet of our “game show ARG” concept, preserving it as a creative component but also simplifying it. Thus in our final ARG, the broadcast served as a regularly-scheduled weekly episode airing, after which it would go offline until the next airing. We similarly scaled down the genre contributions of “campus satire,” “investigation,” and “eerie/reflective,” building them into portions of the game such as sponsor websites rather than the overarching narrative theme.

An example of this can be seen in the adjustments made to our format of story delivery. When, for instance, campus satire was a more predominant creative directive, we had plans to write a larger quantity of jokes poking light fun at WPI systems, including some which involved “on-site” puzzles and subplots around campus. Mechanics would have included -- with permission -- “hijacking” existing WPI systems such as the library, mail services, and social media and using them to divulge clues and narrative beats to players, the culmination of which would be an event in which the gargantuan Feature Wall screen in WPI's Innovation Studio would be “taken over” and used for a dramatic finale. In this way we aimed to embrace the constraints of WPI to deliver an experience tuned to our audience of students, but since lines of communication with other departments were never established as time ran thin, our team pivoted to an app-based approach in which content was delivered directly through our own channels.

The largest change made to the original concept of Comroddity was in relation to its ending. The core of our initially proposed experience was a secret society-focused narrative, inspired by the benign “secret societies” of WPI: loose, enduring collectives of students with some combination of costumes, stories, and playful “rituals” in which students coordinate walks around campus, hand out gifts, or other small activities. These groups are often discussed as
fragmented rumors around campus rather than via official channels, adding to their mystique and lending them a legend-like presence which we sought to embody in our game. Initially framing the show Comroddity as the product of a fictional secret society on campus, our interest was in making the society “real” by the end of the ARG -- our design would have seen players initially dig deeper into the society’s origins, only for the most dedicated puzzle-solvers to ultimately be invited to become the leaders of the group, establish a voice for it, and continue its legacy. It was during these discussions that we agreed legacy was to be a core facet of our experience goals that must stay paramount, and though we moved away from the secret society concept due to it contributing unnecessary narrative complexity, we still preserved legacy by way of leaving our web application in a state where future viewers could freely rewatch, replay, and reflect on Comroddity as a whole.

Previous motifs and unused visual designs for Comroddity, particularly the main app, can be viewed under Appendix G - Past Designs.

IRB takeaways

Following the approval of our project by the IRB, we were made aware that the board was interested in the outcome our MQP and would be convening further to assess their own language and how it impacts projects with “deceptive” gameplay elements such as ARGs; it seems that following our discussion the IRB has a clearer image of what constitutes an ARG, understands that the “deception” that is part of an immersive community game is not analogous to deceptive research, and is interested in working with future projects which keep secrets for benign gameplay purposes. For our team, this a key accomplishment of our project as a whole: reframing the problem of ARGs to foster a distinction between the research definition of deception and that used in gameplay design, and clarifying the nature of an ARG in the eyes of the board. We hope that our efforts (documented in section Working with the WPI Institutional Review Board) will inform and assist future ARG teams in their own approval process.
User engagement

On average, we received approximately six responses to each daily question via the Comroddity app for the duration of the game show, well below the “we asked one hundred people” figure used by Family Feud and Pointless; across all daily questions we received a rough total of 131 responses. This resulted in a few questions in our in-person game show having somewhat obscure or opinionated answers to guess on account of low sample size.

While a few viewers (often one to two) would attend each live broadcast as indicated by Twitch, majority of our participants viewed the show via our VODs instead, particularly while looking for clues to solve the sponsor website for that particular episode. Approximately 70 player accounts on the Comroddity app had been made by the end of the ARG, yet fewer than 20 remained routinely active (solving pillars and responding to prompts).

When new sponsors debuted each week, our Discord would briefly see an uptick in engagement as players would convene to discuss puzzles briefly. Similar discussions would ensue after players were updated about technical difficulties or announcements were made, and general conversation about the game show also took place on a few occasions. Outside of these instances the Discord was often quiet -- indicating minimal community-building or spontaneous player-to-player connection -- but it still succeeded in its game communication role.

The Comroddity Instagram did not attract as much engagement as anticipated. As detailed in Producing the game show under Implementation, our weekly challenges saw few submissions to the point that game show contestants could not be sourced. Though well into runtime we began using the Comroddity account to comment on other WPI-related posts and garner engagement from a few additional students (see Social media presence under Campus publicity), this late attention was not sufficient to substantially grow an audience. Our team strongly suspects that a lack of early-game distribution of this Instagram was a key weakness: the page was not initially publicized on the Comroddity Discord, and was at first only linked deep in our FAQs tab on the Comroddity app before it was later added to the app footer, leading to even active players never realizing it existed.
User feedback

During Comroddity, we asked players interested in playtesting credit to fill out a survey for us. From this survey, we learned that 54.5% of players felt that the daily questions were their favorite aspect of Comroddity (shown in Figure F below). Players stated they enjoyed the questions we posted. A few noted how quick and simple it was to answer questions, yet it required them to think a little. The next considerable portion of players said to have enjoyed solving our pillars, most of them having solved the Buffoonery pillar and out of those players, 80% of them have stated it was an enjoyable experience (shown in Figure G). Many players noted they did not need help in solving these pillars and have found the sponsor websites interesting to go through. Of the sponsor websites, 66.7% of our users who visited them felt Buffant’s Institute of Clowns was their favorite of the three (see Figure H).

![Figure G: Results of playtesters’ favorite aspect of Comroddity.](image-url)
I found the experience of solving my first Pillar... (Answer with as many or as few as desired)
5 responses

Figure H: Playtesters’ experience with first pillar

If you explored any of the sponsor websites, which was your favorite?
6 responses

Figure I: Playtesters’ favorite sponsor site
Based on the playtesters’ results, we have seen that the first episode garnered a higher engagement level, with 57.1% of playtesters watching it. Conversely, the second and third episodes were met with relatively less engagement, as only 14.3% continued to watch the second episode and 28.6% watched the third. From this it seems that the first episode was more effective in captivating the players’ attention (see Figure I). In addition, out of the playtesters who watched episodes, 66.7% of them indicated the first episode as their favorite (see Figure J).

Figure J: Episodes playtesters watched.
Figure K: Playtesters’ favorite episode.
However, we have learned that players did not engage with weekly tasks on our Instagram. On top of that, we learned that players found the main show could have been more interesting. Many noted that we could improve the gameshow’s editing to make it more engaging with the audience. Those suggestions include sound effects or music to avoid awkwardness, avoiding stale jokes, adding a counter on the screen to count up the points for the contestants, and different costumes for the actors each week. These suggestions would make the episode more lively, and in their opinion, help retain the player’s attention while watching them.

At the conclusion of Comroddity we distributed a feedback survey via the Comroddity Discord to poll our players’ final thoughts about the ARG. Although we received six responses, only three were fully completed. Based on that information, we have discovered, to our surprise, that we actually attracted a crowd of alumni and graduate students to our ARG. We have learned through Likert scale format questions that the game was in the middle ground of being engaging as shown in Figure L below. Players responded by saying the sponsor websites and daily questions were fun, but there was little to do. Some stated that the videos did not feel as engaging to watch and others have noted that activities being on-campus only limited the engagement for them as they were remote or unable to attend certain events. Players also stated that the word of the ARG reached them from even outside of Massachusetts, and the marketing done in the WPI Esports Discord seemed to broaden our audience.
How engaging do you feel Comroddity was?
1 being not engaging to 5 being very engaging

![Bar chart showing engagement ratings](image)

*Figure L: Feedback results on engagement*
Players found the ARG to have the element of Buffoonery, but our other two themes did not have as strong a presence. Noting that they were more subtle than the first and the last one being tied to the last puzzle was not noticeable to those who could not solve it. Some say the gameplay could have been faster, noting that the game show and website were excellent, but the puzzles were too slow to deploy, and pointing to the third puzzle was too difficult. It has also been noted that our Discord could have been more easily discoverable, so for future ARGs, continually advertise Discord or whatever communication method is used with the players in all of the marketing. Due to this, some players felt isolated from the game show.

Finally, most players have reported that the finale was not engaging if they were off-campus and felt dull or bitter. Players said to have advised them to be on campus for the finale prior to the episode airing or to have a way to include the online and or off-campus audience. It would be highly beneficial for future ARGs to reflect on this and also incorporate a feedback survey, even if it is not a requirement of the IRB.

**Overall success of Comroddity**

Comroddity’s “overall success” remains a difficult idea to quantify, as while many of Comroddity’s goals for audience retention and community-building ultimately remained unfulfilled as of the conclusion of the game, the project was still thoroughly informative.

Few stones remain unturned. Our work with the IRB clarified a semantic mire and fostered a mutual understanding between IMGD and the board. Our struggles in finding an audience were traceable back to only a few minor early-game technical and social media distribution issues, most of which could have been alleviated with early testing and publicity planning -- in fact, the largest failure was the result of a WPI firewall bug, documented under *Technical Implementation* in section *Implementation*, which our team had no means of finding out about until we stumbled directly into it. Aware of all that are now, and given another chance to build this ARG and grow a more broad, active audience from the start, problems such as a lack of show contestants and our low response count per question would never have materialized. Though we stumbled over many hurdles, we came to know each one.
It is for this reason that our team eagerly awaits future MQP-scale ARGs: while we do not have the ability to turn back time and try again, we believe future teams will benefit from the insights documented in this report as they build their own compelling narratives on top of reality. In this way, we hope that each new team encounters fewer and fewer obstacles than ours did -- or, perhaps better yet, they trip over *new* stones and write all about them.
Reflections

John Edward (referred to as Ed) was a member and temporary lead of Tech Team. His primary responsibility was creation and management of the central Comroddity app, including implementation of Maddie’s specifications and maintenance during the course of the game’s runtime. He provided assistance with API configuration as well as deployment on sponsor sites.

Ed feels that while much valuable groundwork was laid for future ARGs by Comroddity, relatively few tasks happened on schedule and the group struggled greatly to make decisions. In his eyes, one of the early mistakes of the project was placing every member of the team on a proper “design” role, as while the sentiment of everyone “having a say” in the final project was commendable, that was an outcome which would have happened anyway; placing everyone on design simply meant that nobody would be responsible for stepping up and making final design decisions. Ed struggles with executive functioning due to ADHD and therefore did not want to serve a leadership role, but ultimately served as lead on Tech Team in C Term out of necessity and the panic of many assets suddenly needing to be completed.

In Ed’s opinion the constant fluidity of the project vision was a severe problem, citing that it was unclear what Tech Team was supposed to be creating for majority of the project period; final specifications for all web visuals were created in C Term -- including mockups for sponsor websites being provided on average within five days of expected deployment, which was unacceptable -- and new feature ideas were sometimes added “on the fly” including during the game. The latter would not have been an issue, as he anticipated having development work to accomplish in C Term based on players’ emergent needs, but combined with the brisk pace at which completely new assets such as sponsor websites were expected this became infeasible. Additionally, many early “specifications” took the form of bullet points and lists of possible puzzle ideas rather than detailed mockups, which Tech Team could not work with. He feels that Art Team may not have been aware of the severity of these problems and that he should have communicated this point more clearly to them. In his opinion, all design and roughly 50% of the technical assets should have been fully solidified by the end of the first project semester.

Ed feels that the project had more “modules” than it needed, particularly in terms of social media platforms, and that not enough thought was given to how they would connect or
how players would discover each, leading to confusion for players. Between this and a large number of unintentional red herrings and dead ends in the narrative, he is concerned that the team never completely solidified around one coherent mental model of what the game was.

During the A and B terms, Justin contributed to brainstorming ideas for the design of our ARG. Justin implemented organization via Discord with separate channels and another application called Trello. He has also helped set up the MongoDB server for the main website as we started implementing what our backend would become. Along with the MongoDB server, Justin helped organize our once-called livestream page. He started to take on the responsibility of writing the agendas.

Justin’s commitment to the project was further demonstrated in the C Term timeframe. He took on significant responsibilities with the IRB, initiating the document during the winter break and working closely with Melissa and Ruth to finalize the documentation and materials. His other responsibilities included implementing the sponsor websites and attempting to replicate our Figma designs in HTML, CSS, and Javascript for the backend. Despite the time crunch, Justin was always ready to assist with tasks such as text or puzzles for the sponsor sites.

Additionally, he created and monitored the Comroddity Discord server for players to use. He engaged on Discord as the Host to inform or interact with players. He also managed Twitch, ensuring videos were saved and reuploading them to YouTube. He has also implemented an automatic streaming setup on his home desktop through batch files. Besides the technical aspect, Justin also lent a large hand in the production work, bringing many materials from home to help the set.

Justin believes his subgroup handled the time crunch of C Term incredibly well. Ed has done an enormous UI overhaul on the main website, and Niralya and Justin have implemented all the websites to a near 1:1 scale. He believes we handled all the maintenance issues that arose as best as we could at the time being. Furthermore, he is delighted that he was able to manage both sponsor websites and the IRB during that strict time crunch. Justin is also delighted to have set up the automatic streaming program since streaming from laptops on campus wifi could have been better and spotty. He feels this helped relieve some stress during the hectic crunch of C
Term. And throughout D Term Justin focused on the final paper and the CS MQP presentation board.

However, Justin felt there needed to be a decision-maker early on. He stated it felt like, periodically, people’s thoughts or inspirations fell on deaf ears or slid through the cracks; He would see someone work on something only for someone else to overwrite it and or completely disregard it. While this could have been for the greater good, he believes there could have been better communication during the ARG. Justin also noted that we underestimated marketing and did not think out every possible user interaction, which was something we could have improved.

If he were to change things, Justin recognized that we should have emphasized organization more; he felt we spent too much time brainstorming in B Term rather than narrowing down the ideas. However, if we had narrowed down the ideas and got a head start on the MQP, then C Term would have run smoother and have had a better ending. Justin recommends that future teams have someone from each team who can put their foot down on decisions; this is challenging because it would be improper to dispose of the team’s work. He would also recommend, in the future, if the IRB documents arrive when there is a time crunch, to have at least two people on it, especially where things are being developed. He found it challenging to keep up to date on changes in the narrative side while implementing sponsor websites and creating documentation for IRB.

Another thing to note would be that, with the streaming time, try to find a time that does not clash with other IMGD events. Our ARG’s streaming went at the same time as the colloquium, which caused some confusion with our audience, thinking it was only during that period. Justin also would heavily recommend that the next ARG team think about marketing; although posters were good, he had a hunch from the beginning that they would not grab many people’s attention. He would recommend investing time into the Innovations and Fuller Screens for something that’ll grab players’ attention. Try to grab a table at the CC for some advertising; it would be wise for C Term’s new priority to be marketing as designers try to gain players. Alongside development for how the game would end, He states this because we had more alumni than expected in the survey responses. (See User feedback under Evaluations for details)
During A Term, Niralya contributed to the brainstorming of ideas that would eventually become the ARG, and contributed a lot to early puzzle design. Niralya was part of Tech Team with Justin and Ed. She was responsible for managing Comroddity’s booth at ProtoFest, both creating the physical deliverable and monitoring it in person for activity. In B Term, Niralya switched to a more development-oriented role, creating an initial prototype puzzle to integrate on the main site and working on the videos page for it. She also assisted with the content that would be displayed at the AlphaFest booth.

In C term, the project neared its official launch, so the majority of development began. Niralya developed many of the server side API calls and client side hooks for the main site. They were tested locally so that they were able to be integrated into the main application without issues. In addition, Niralya was primarily responsible for the integration of the Sponsor sites, both the frontend and backend API calls. She worked closely with the Art Team to implement their Figma mockups. This was a tight schedule, as since a new sponsor site went up for each episode, she didn’t have much time to work on them. Niralya developed the first site, Buffant’s Institute of Clowns, alone. She worked with Justin for the next two sites, Small Town Equity Management and Springfield Bovine Festival. It was a challenge to work on such a short timeframe, but the sites turned out wonderfully.

Niralya personally is happy about the fact that she was able to get everything done and looking good despite the time crunch, especially for the first sponsor website since it laid the foundation to be able to expand and improve on future ones. Niralya believes that the tech development subgroup excelled at organization. They were always able to plan their moves out for the week such that they’d be able to complete them, especially during the hectic C term. In addition, Tech Team excelled at working together, whether it was on the same project or multiple interlinked projects. There were never any problems with multiple tech people working on the same sub project. Something else that Niralya is very proud of is the final presentations in D Term for both the CS and IMGD portions. The team put a lot of time into making them look good, and executed both of them with style.

Niralya personally believes she struggled with time management, especially for the A and D Terms where she was overloading. This often led to late nights working on parts of the project which may not have been necessary. In addition, she believes the direction of the project changed
often in the early terms, which led to confusion and missed details often between all members. If we narrowed down the direction early on, we could have started development earlier and avoided a lot of the C Term crunch and enjoyed the process with a lot less stress. On the opposite end, a lot of good ideas were brought up early on that didn’t go anywhere because they weren’t discussed fully with the team.

Niralya learned a few important lessons through this MQP. First, the value of marketing and advertising to players – our advertisements often left a lot of room for doubt among potential players. They were afraid to join because of the cryptic messaging, a fear of not joining the game too late to make meaningful progress, not understanding the game, and a lot of other reasons (even including players not joining because they thought it clashed with colloquium). Even though we tried to advertise our game as cozy and flexible, it is clear that did not come across to many players, who found the prospect of joining very daunting. In addition, looking into more avenues of advertisement would have attracted more players. Secondly, she learned that it was important to speak up if she felt strongly about something in the project, because bringing it up later when things were a lot more finalized ended up being far more of a hassle than just tackling that problem from the start. Finally, Niralya learned just how important frequent communication was in a short time frame, which is something she will carry into all future projects and more.

During the planning phase of the project Maddie Veccia contributed to brainstorming and developing the concept of the ARG. Maddie primarily worked with Renee Cullman and Vijay Mistry on the narrative of this ARG and created the vast majority of graphic design assets. She created the styling of Comroddity as well as its logos, posters, website visuals, and other ephemera. She developed puzzles for two of the three sponsor websites and worked with Renee Cullman and Vijay Mistry on the games and structure of the game show as well as its scripts. Additionally, she played the enigmatic “Host” figure on the game show as well as the gloved hands of the judges. Finally, she managed much of the advertisement during the run of the ARG.

Maddie struggled with the organization of her workload during A and B terms. She struggled with communication via Discord, finding it hard to keep up with the messages sent by her team members. This communication issue led to the rush of content development during C
Term. During this time, Maddie struggled with keeping up with the breakneck pace and was put under a huge amount of stress.

Maddie primarily worked in the Art Team who struggled with synthesizing content for the ARG on a consistent schedule. Many large narrative decisions were made as the ARG was ongoing which added more complexities to the weekly work schedule. This issue was also present in the preceding terms and resulted in much time lost. The Art Team also struggled with dividing workloads. This was due to the many non-narrative tasks we also managed (like advertisement, puzzle design, and game design), but communication was also a factor.

Maddie was able to succeed in completing her tasks during the rapid week to week content production schedule of C Term. She took on many roles during this time and managed to host the game show with little to no practice of the script. Additionally, she communicated with her team during this time and was able to help better re-distribute their workload. Finally, she was able to act as the sole graphic designer for the posters, sponsor websites, main website, and many other small elements of the ARG.

Art Team was also very successful during the crunch time of C Term. Each game show episode was designed, filmed, edited, and released within one week each. This massive workload included designing the puzzles for our sponsor websites. Our team was also very successful during collaborative in-person planning meetings where the majority of the show’s narrative was written.

This project showcased a number of lessons, the first being that communication is of great importance. Finding a method of communicating goals and ideas to all of the team that works for all of the team is paramount to success. The second lesson was that advertisement must begin as early as possible to ensure as large a player base as possible. The final lesson was that creating a plan and sticking to it will ensure a much smoother development experience and establish a stable and healthy work flow.
ISP teammate critique

Renee Cullman assisted in conceptualizing our ARG in A Term and helped with puzzle design, narrative structure, website mockups and text content, Instagram management, and directing the game show. She also edited the game show’s episodes unassisted throughout C Term, with her editing skills being very positively received by our team, contestants, and players.

Renee observed improvements in our team’s organization and efficiency after B Term. She noted that while Protofest was challenging, it provided valuable lessons that promoted more significant interaction and engagement during Alphafest. However, she identified several areas that needed improvement, such as initial shortcomings in team organization, hurdles we faced with the IRB, and the lack of time available to develop and test sites and puzzles. She was concerned with the significant amount of time required for video editing relative to the brisk turnaround needed in order to meet weekly deadlines.

Despite these challenges, she was pleased with the Art Team's ability to produce work and make quick adjustments when plans changed. Renee also highlighted the consistent productivity of our meetings and our effective team communication.

Vijay Mistry contributed greatly to our ARG’s narrative and puzzle design, and also provided extensive publicity recommendations based on previous experience. He additionally assisted with writing text content for the sponsor websites.

Vijay felt that we hit our stride in B Term, finally understanding the focus of our project, and loved the dynamic we had together as a team, noting how Tech Team members were willing and comfortable with saying no when they felt something was not achievable. He also felt that the video editing and filming were well organized and that our willingness to make pivots in our design helped us create an exciting experience. Vijay observed that the team had difficulty during A Term deciding on a direction or finding somebody to make decisions, noting that roles were very loosely defined; as he expressed it, everyone was trying to do design, but nobody could
make a final decision. With this in mind he felt that team organization was sometimes lacking, but ultimately improved in the end.

Vijay felt it was inadequate to leave two large-scale tasks of the ARG to one or two people unassisted: handling of IRB materials and video editing. Moreover, upon reflection, he felt that he had over-committed to the project and could not follow his promises.

Despite the aforementioned issues with organization, Vijay spoke highly of our meetings. He noted that we always came prepared to talk and were productive, were civil with one another, and always ensured group problems were addressed. He also noted that it was interesting to see how willing we were to pivot from plans when things did not work out, emphasizing the shift from inviting players as contestants to sourcing students whom we personally knew.
Conclusion

One of the driving goals of our project was always legacy, and our team achieved this ideal in one of the last ways expected: clearing a channel for future ARGs to grow larger than our own. Though we faced challenges building and maintaining an audience for an intentionally clandestine public game, we successfully designed and ran IMGD’s first “secret ARG” MQP, Comroddity. Coordinating a multimedia network -- including a central application, a string of baffling puzzle websites, and an entire game show recorded and broadcast weekly -- came with no shortage of problems to solve, with obstacles arising even as players were in the midst of the story. Yet by persevering through design challenges, technical difficulties, and barriers in project approval, we deployed a gentle, engaging experience for a small audience of dedicated players lasting four weeks. Despite starting with no “handbook” to guide us, we came away with one.

Our team urges future groups to continue what we have started by building larger, more widely accessible alternate reality games that bring audiences together, and we encourage the WPI community to please stand by -- and stay tuned -- for the immersive stories that air next.
References

ABC. (2024). *Family Feud*. whole, Atlanta, Georgia.


https://analoggamestudies.org/2016/03/urban-codemakers-decompiling-the-player/


Appendices

Appendix A - Rubber duck acquisition

All rubber ducks used as part of Comroddity were sourced from Amazon at the following:
https://www.amazon.com/dp/B07SMV3L4V

Our team and contestants strongly recommend the above rubber ducks, citing their affordability, tensile strength, lively countenance, and efficacy as loud, shrill game show buzzers.

Appendix B - Main website

The Comroddity legacy applet can be accessed at: https://comroddity.wpi.edu/

The applet, generously hosted by WPI Academic Research Computing, is now under the purview of Professor Melissa Kagen. She may be reached at mkagen@wpi.edu.

Appendix C - Sponsor websites

Recreations of the Comroddity sponsor websites may be accessed at the following:

- Buffant’s Institute of Clowns --
  https://comroddity.wpi.edu/buffantsclowninstitute/clown_home.html
- Small Town Equity Management --
  https://comroddity.wpi.edu/smalltownequitymanagement/index.html
- Springfield Bovine Festival --
  https://comroddity.wpi.edu/springfieldbovine/index.html
Appendix D - Episodes of Comroddity

Recordings of all episodes of Comroddity may be accessed at: https://comroddity.wpi.edu/videos

Four episodes were broadcast in total:

- **Episode 1: Let the fun begin!** (aired: 2/7/2024) -- https://youtu.be/jZYu3d4l0G8?si=M6Cnqg-Sn7gMZhfN

Appendix E - Comroddity questions and tasks

The following daily questions were asked as part of Comroddity:

- If science is green, and art is purple, what is history?
- If the colors of the rainbow formed a sports team, which color would be the team captain?
- If the letters of the alphabet were in the Hunger Games, which one would be the first to die?
- Which major is the biggest red flag?
- Name a song likely to be playing at a frat party.
- Which US state best represents the color gray?
- What is the best kind of milk?
- What is a common activity people do on Valentine’s Day?
- What is the best place within walking distance to eat off campus?
- Input a single, simple word.
- Name a place filled with people who do not want to be there.
- Name something that drips.
- Which major is the most “crunchy”?
- Name a way eggs are prepared that could describe a person.
- Name something someone might have up on their laptop during class.
● What's the fastest way to tell that someone is a nerd?
● If November is Thursday, what is September?
● What is the best time for a midnight snack?
● Name an occupation for squirrels that doesn't involve nuts.
● Where is the best place on campus to take a nap?
● What is a better name for Unity Hall?
● Will you remember Comroddity?

The following weekly challenges were released as part of Comroddity:
● Write “Comroddity” on a public chalkboard or whiteboard.
● Take a selfie in front of something you normally consider odd to take a selfie in front of.
● Wear an outfit of all one color of the rainbow.
● Leave an inspirational message on a campus chalk or white board.
● While in a public space, respectfully pet an inanimate object.
● Find a small rock and place it at Gompei’s hooves as an offering.
Appendix F - Comroddity posters

Comroddity's first marketing poster used around campus.
Updated poster featuring the Comroddity Instagram and a playtesting credit offer.

Poster advertising the final “All Stars” episode. These posters were also printed as flyers.
Appendix G - Past designs

Original design for the front page: daily question display.

Previous menu bar design.
Previous episodes page, with no episodes inserted.

Previous FAQ page, including first-pass styling and formatting.