HOW DO GAME SYSTEMS IN SPACE STATION 13 INFLUENCE PLAYER LED NARRATIVES AND CHOICES

Digital Humanities and Information Technologies

Fourth Year, Final Year Report

Calum O'Regan – 120467752

Head of School/Department: Shawne Daye

Supervisor(s): Cathal Hoare

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Abstract

Space Station 13 serves as a compelling case study for understanding how digital environments can facilitate immersive storytelling and cooperative engagement, bridging the gap between role-playing in a video game and academic interests, especially within the realm of digital humanities.

Introduction

This report aims to answer my Digital Humanities final year project question, ‘How do Game Systems in Space Station 13 Influence Player Led Narratives and Choices?’, by first introducing the game Space Station13 through its history, gameplay, community, and relevance to digital humanities, analysing projects with similar goals and themes so as to adjust my approach to this project accordingly, elaborating on my initial planned approach to this project and how I would conduct it, choosing which relevant tools and methods I will be using to complete this project, and relaying my analysis before reflecting on it and concluding. The reason I chose this project initially was that I had been an avid player of the MMO (Massively Multiplayer Online), sandbox, social deduction RPG video game, Space Station 13, for a huge portion of my life, dating back to around 2017 when I was first exposed to it. Over the years, I found that the game had a certain stigma surrounding it, that being that the player created narratives were often completely bizarre, in a way that no other game I had played could replicate. Stories about players replacing their patients’ limbs with household objects, transforming their workstations into independent city-states, or forcing other players to complete monotonous paperwork to acquire certain items, while absurd, were all routine and commonplace within rounds of Space Station 13. After years of hearing new, outlandish stories coming from a game with no set story, I believed that Space Station 13 was worth analysing as a narrative tool, rather than just an MMO game.

To understand this project, it is necessary to know what Space Station 13 is, and how it became what I believe to be one of the leading sources of good player driven narratives in the online-games space. The ‘official’ Space Station 13 website explains that it is an open-source, “community developed, multiplayer round-based role playing game, where players assume the role of a crewmember on a space station.” (Space Station 13), but contains very little further information about the game, as most of that can be found on the games many wikis. Like mentioned before, the game follows a crew of players manning a space station, each round in-game can last anywhere from 90 minutes to 3 hours, sometimes more depending on which server you join. The game is presented in a top-down, tile-based fashion, giving the impression that it is much simpler than it looks, something that catches many new

players by surprise. The simplicity on first glance is very deceiving, as Space Station 13 has hundreds of underlying mechanics which interact with each other to keep even the simplest of things, like lightbulbs or oxygen distribution from malfunctioning. The game originally was created in 2003 by ‘Exadv1’ as an atmosphere/air simulator, with the Alien franchise being one of its key inspirations. Following its release, the source code of the game was leaked, and many different versions of the game began to be developed in tandem by different people, resulting in different codebases the game hosts today. Over time the game grew in popularity on niche corners of the internet, with the player-base steadily growing to the healthy 1000-2000 players averaging the games servers today. Between 2003 and now, development never slowed down, and mechanics continued to grow out from the simulation it was intended to be, allowing for countless role-playing opportunities for players as more jobs would become available to them during rounds. Currently, on one of the most popular codebases among players, Goonstation, there are 50+ unique jobs and roles for players to choose from or be assigned to, each with their own niche tasks to complete.

Of the jobs and roles available to players, antagonist roles are present. These are roles assigned to random players at the start of each round, and work as catalysts for the players to create tension and havoc on the station. Antagonists can be seen as the ‘primary villains’ of each round, and more than likely will create interesting narratives just be performing their set of randomly assigned objectives. What is important to realise is that of the average 50 – 100 players on a server, only a handful will be selected as antagonists, most of which will not be known as antagonists to the rest of the crew, who are expected to perform their tasks and work together to keep the station afloat. This dynamic, of secretly assigned antagonists among a large crew of players performing their own tasks, is very unique to Space Station 13, as the freedom it allows its players, regardless of roles, can lead to interesting player led stories as they all interact with the deep mechanics present on the station.

Each station usually shares the same 4 sections of jobs, those being Civilian jobs, Engineering jobs, Security jobs, and Command jobs, each containing individual jobs with their own respective tasks and social hierarchy. For example, Civilian jobs are often friendly to newer players of the game as they offer the most freedom with very simple tasks, to allow players to adjust to the mechanics, but this comes at the cost of

social hierarchy, as Civilian jobs cannot access most of the essential wings of the station, like Engineering or Security. On the complete opposite end of the spectrum is Command jobs. Each Command job places you in charge of an important area of the station, such as Head of Security, who must keep the Security officers in-line, while holding access to the station's armoury, or the Head of Personnel, who is in charge of all the administrative tasks such as distributing staff ID's and reporting directly to the captain of the station. With just these two Command jobs, and their associated mechanics, it is easy to see how, if mismanaged, they could cause chaos aboard the station.

This relationship between the freedom the game gives you alongside the choice of lesser or more important roles is why I believe Space Station 13 is an outstanding narrative tool, and worth researching in relation to the digital humanities. To research Space Station 13 in relation to the digital humanities, I proposed the question, 'How do Game Systems in Space Station 13 Influence Player Led Narratives and Choices' and planned to survey those that played Space Station 13, before mapping my findings on an interactive graph, so as to clearly find the links between game mechanics and player narratives and choices. Before beginning those, I decided to research what few papers I could find which related this kind of approach to comparing mechanics, player choices, and player interests.

Section 1: Literature Review

Digital games have become a significant medium for entertainment, education, and social interaction, shaping the behaviours and experiences of millions of people around the world. Understanding the complicated relationship between game systems and player narratives is crucial for unlocking the potential of games as interactive storytelling platforms, especially in the cases of MMO (massively multiplayer online) sandbox games, which often struggle to encourage players to carry their non-existent narratives. In this literature review, we look into the space of

digital games, focusing primarily on projects and papers with similarities to this project.

The aim of this review is to explore existing research and projects that help understand how game systems influence player-led narratives and choices. Specifically, we will be comparing their findings to this projects', covering various aspects of game design, player behaviour, and social interaction. By comparing these texts and projects to this project, we aim to uncover what mechanics keep players engaged and immersed in the absence of a predefined story.

In this review, we first talk about the influence of competitive and cooperative video games on behaviour, drawing parallels to the social elements within SS13. We then delve into the realm of digital game-based learning, exploring its relevance to understanding SS13 as a learning environment, given its history as originally being intended as an atmosphere simulator. Next, we examine studies on role-playing video games and social videogame creation to better understand player-generated narratives and content creation within SS13. Additionally, we explore the measurement of social interaction potential in active video games and cover the idea of using digital games to increase interest in STEM, relating these concepts to SS13's gameplay mechanics, before mentioned history, relation to the survey and narrative potential.

By covering the texts in this study, we aim to identify and address gaps in research related to player led narratives, cooperative digital games and possible links between role-playing, co-op games and STEM interest, with the final goal of better understanding how the project should be conducted.

Starting with the influence of competitive and cooperative videos games on players' behaviour, in Verheijen, Stoltz, Berg and Cillessen's paper covering the topic, there is mention of how players cooperating in video games towards achieving a shared goal or task can foster a positive attitude when working alongside others in any other situation, claiming that "Experimental studies have shown that cooperation during gaming reduces aggression in cognition, affect, and behavior" (Verheijen, Stoltz and van den Berg) followed by "Playing a cooperative game together also has been shown to increase prosocial behavior" (Verheijen, Stoltz and van den Berg), claims that are reflected in the community for Space Station 13, where many of the player

made stories originate from player comradery within the game, happening abruptly without any intervention from a game director or administrator. The inverse can be said about the competitive aspect of the game, where stories covering one players mechanical abilities when dealing with other players are commonplace when balance issues or suggestions to change game rules are raised, with the authors of this paper claiming that competitive elements in things like combat can “impact the social dynamics within the game, potentially leading to conflicts or hostile interactions among players” (Verheijen, Stoltz and van den Berg), which, while true and relevant to Space Station 13 given its rigid mechanics, can often be essential to nurturing player made stories, as the competitive aspect can bolster players to interact with the array of mechanics the game offers them, further creating more interesting stories, unfortunately at the cost of some players enjoyment of the game at times.

Outside of the direct comparisons between the studies views on cooperative or competitive approaches to gaming and the existing player stories in the Space Station 13 community, the study also emphasizes the importance of understanding player interactions through observation, be they cooperative or competitive. The authors claim that “understanding the emotions and actions that occur while a game is being played can provide an insight in the exact way competitive and cooperative gaming changes behavior” (Verheijen, Stoltz and van den Berg), an important step to take in any MMO, not just Space Station 13, as to blindly approach a situation in game without first observing how the players present are interacting could cut into their own narratives or role-playing, limiting the space for natural player led narratives. This is also relevant to the moderators of games like Space Station 13, as first determining if the players are playing competitively in an ethical manner can be the difference between an interesting player story or a player reporting the other later on, it is just as much an admin or developer’s role to nurture player narratives as it is the players themselves. The findings from this paper will prove valuable when approaching certain mechanics that will be mentioned in the Space Station 13 survey, as it will help to categorise whether they are cooperative, positive competitive (where the competitive portion of the mechanic or story mentioned worked ethically in favour of the story) or negative competitive (where the competitive aspect deteriorated an otherwise interesting story).

Following this paper is the research into game-based learning for STEM, by Ishak, Din and Hasran, with a large focus on visualising key concepts from STEM courses inside video games, where they can be interacted with much easier, as well as focusing on the potential video games have for nurturing interest in STEM, a concept extremely relevant to Space Station 13 given its existing in-depth mechanics which aim to replicate real chemistry and science, making this paper a very suitable resource for research.

Given that Space Station 13 presents all players, regardless of skill level or experience, with he same set of complex and immersive mechanics, it is bound to integrate learning opportunities similar to the way they would be presented in a digital STEM game, although Space Station 13 approaches these in an emergent manner, allowing players to come to their own conclusions in an unstructured manner. With this in mind, viewing Space Station 13 as a learning environment that could be studied or changed when creating a digital STEM game could prove useful, as the authors state that a "game perspective emphasizes content and the game characteristics for enjoyment, while educational technology emphasizes learning content and a pedagogical approach" (Ishak, Din and Hasran) highlighting the similarities Space Station 13's approach to learning environments has to the requirements of digital STEM games, being the presence of learning content and pedagogical approaches. This alone shows that Space Station 13 could be a valuable learning tool if it integrated more realistic STEM elements.

Alongside the previously mentioned set of complex and immersive mechanics, Space Station 13 also offers and accommodates a rich community of players who engage with the game both during gameplay and development, further expanding the possibilities of Space Station 13 as a learning environment, as it enables people to see how players engage with the in game world and mechanics, sometimes remaining in character, during gameplay, and how they reflect on their experiences with that world and its mechanics outside of gameplay. With the authors claiming that "Digital games may therefore affect individual psychology in that the experience of playing is related to an interest in STEM" (Ishak, Din and Hasran), based on Krapp's concept of interest, the idea of the Space Station 13 community developing the game based on their own experiences could be a huge blueprint for creating interest in STEM via implementing similar development processes. The tight-knit

nature of the community is something that digital STEM game development could learn from and attempt to implement.

Following the examination of SS13 as a possible learning tool, the papers ‘A study of how different game play aspects can affect the popularity of role-playing video games’ by Matthew Horsfall and Andreas Oikonomou and ‘Social videogame creation: lessons from RPG Maker’ by Trevor Owns, were researched in tandem, as both covered similar topics in relation to RPG games and their mechanics, such as their focus on online communities as social platforms, as well as the prioritisation the understanding of users’ experiences and perspectives on those communities, including the importance of catering to these users’ interests in a way that supports their roles and identities in-game.

Horsfall and Oikonomou highlight the importance of social interaction in MMORPG games through their existing mechanics as a form of social platform, as catering towards social interaction in these games creates a tighter-knit community that can collaborate without being forced to by developers, they support this by quoting J.J. Lee’s book ‘Human-computer Interaction: HCI Intelligent multimodal interaction environments’ by saying that “a game-based environment is designed to encourage a high degree of human interaction with the indigenous NPCs, as players encounter prototypical social contexts or scenarios” (Horsfall and Oikonomou), insinuating that interacting with NPC’s within an MMORPG, or in SS13’s case, the job mechanics will always push the players to collaborate and socialise.

While RPG Maker games are typically single-player RPG’s, Owens still relates the tools’ community to a social platform, just like how Horsfall and Oikonomou compared MMORPG games to social platforms in themselves, the difference in this case being that Owens is referring to the online forums surrounding the RPG Maker tool, commenting that the “web forums were originally set-up by the software company, but over time the structure and organization off the forums have been reorganized by the community site’s members to best fir their needs and roles” (Owens). This is not unlike how Horsfall and Oikonomou suggested that NPC’s guide the players to the social interactions in MMORPG games, in this case the NPC’s being comparable to the original software developer and is especially not unlike the development and current state of Space Station 13, where the mechanics serve as a starting point for players to interact with each other.

Both papers discuss an understanding of user experiences and user roles and identities online in a similar fashion despite approaching RPG communities through different mediums. Horsfall and Oikonomou do this through analysing player character customization, narrative engagement, and direct feedback. When discussing player character customization, Horsfall and Oikonomou suggest that players creating their own characters that they develop through gameplay allows them to shape their experiences and identities in the game world, in their words, “Each player’s character becomes more and more individual as their appearance changes” (Horsfall and Oikonomou) in relation to the time spent playing a created character.

Owens on the other hand, despite approaching a different context, has similar views in how user experiences are catered to by the extent that they can customize the way they interact with digital environments. The key difference in Owens’ context is that users on the RPG Maker forums, where roles for scripting, art and game design are available to users. These roles, while limited at first sight, mirror those of an RPG game mentioned by Horsfall and Oikonomou, as allowing users to create scripts, art and assets for RPG games can create a deeper connection to them for the creators as they see them progressing from concepts to features in released RPG Maker games.

The reason both of these were studied together rather than given each their own section was because they both cover separate sides of RPG games, being the creation of them using a community driven tool, RPG Maker, and the actual playing of RPG games, two separate sides which are present together in the context of Space Station13. While RPG Maker caters towards single player RPG games, and Horsfall and Oikonomou cover more popular MMO games, Space Station 13 developers are always present within the community of people who play together, allowing for a deeper understanding of players interests, experiences, and identities by developers, while remaining within the heart of the digital community. This in turn ensures that player-led narratives will thrive.

The final paper that was analysed relates to the project in a closer way, titled ‘Deconstructing who you play: Character choice in online gaming’ by Duncan Hodges and Oliver Buckley, where their shared goal was to explore team dynamics when players choose certain roles in video games, the studied video game in this paper being the role-based hero-shoot, Overwatch. Given that Overwatch heavily

relies on teams of people who likely don't know each other working together for a common goal, a comparison can be drawn between it and Space Station 13, if just for the lack of papers covering Space Station 13.

When analysing the player-base for Overwatch, Hodges and Buckley wanted to cover various topics with the questions they were preparing, those relevant to a survey aimed at Space Station 13 included finding player preferences in role selection and gameplay, identifying types of players via Bartle's classification system, relating to player motivations for playing. With a survey such as this covering what could be categorized as a role-playing game, it will surely be of use when discussing the Space Station 13 survey in later sections.

Beginning with their findings on player preferences in role selection and gameplay, their research found that when given the choice of role while able to see what the other team members have chosen, that players will often make trade-offs depending on the team balance, choosing to balance the team rather than go for their role of preference. Hodes and Buckley created a model which mentioned the bimodal distribution in the balance between personal preference and team composition, showing "one mode around 35% and another around 75%, this indicates that all players make some form of trade-off and no players chose either 0 or 100" (Hodges and Buckley), a choice treated more up-front by Space Station 13, as if a player is not ready at the start of the round to be randomly assigned to jobs they selected, they must fill in the empty roles of different sections of the station. This can force some players out of their comfort zones, but just like in Overwatch, can lead to interesting sessions that the player would not have had as their usual, go-to role.

When utilizing Bartle's classification system, which was originally developed for multi-user dungeon games, they attempted to categorize the Overwatch players into four categories; Achievers, Explorers, Socialisers and Killers, to find an understanding of why people play the heavily role-based game. From their results, Hodges and Buckley found that "over 90% of respondents ranked Achiever or Socialiser as the top motivation for playing Overwatch." (Hodges and Buckley), revealing that the majority of those who played Overwatch at the time played to achieve a goal as a team, and to socialise with their teammates, an interesting metric to consider when analysing player stories from Space Station 13.

The topics covered in these papers will be work as key reference points to return to once the survey results have been collected and analysed, as many of the player stories will revolve around specific mechanics in Space Station 13, how they influenced their choices, why they found certain roles entertaining, and if Space Station 13 has inspired interests in other hobbies, likely in relation to STEM.

Section 2: Tools and Methods

Visual Studio Code and Angular.

Given my past experience with the program, I chose Visual Studio Code as my code editor, as my existing plugins made it both an effective and visually appealing editor. I had previously used Visual Studio Code (VS Code) for all of my Computer Science modules in DHIT, and all of their associated assignments, so I already had an existing suite of extensions to assist me with coding in this project. Inside VS Code I would be using Angular, a single-page application framework that uses languages I have previous experience with, such as HTML, CSS and JavaScript (through TypeScript in Angular's case). With the knowledge that Angular incorporated languages I had experience with, it seemed like the perfect choice to build my digital artifact upon, as it also was supported by a range of different modules and libraries. Using Angular in tandem with VS Code allowed be to build my digital artifact in a stable environment with ease of use when testing it, due to VS Code's 'Open in browser' feature.

VS Code proved to be an ideal choice for this project, and Angular gave me little trouble at the beginning of the project. Once I had decided on angular as my framework, I researched its documentation and began creating test apps as to adjust myself to how it works. The Angular documentation is very well organized and easy to read and allowed me to swiftly understand the basics of how the framework functions. My initial test site (fig 2.1) featured just a banner, a centred title, and 4 graph nodes, just to judge how I wanted to size any elements.

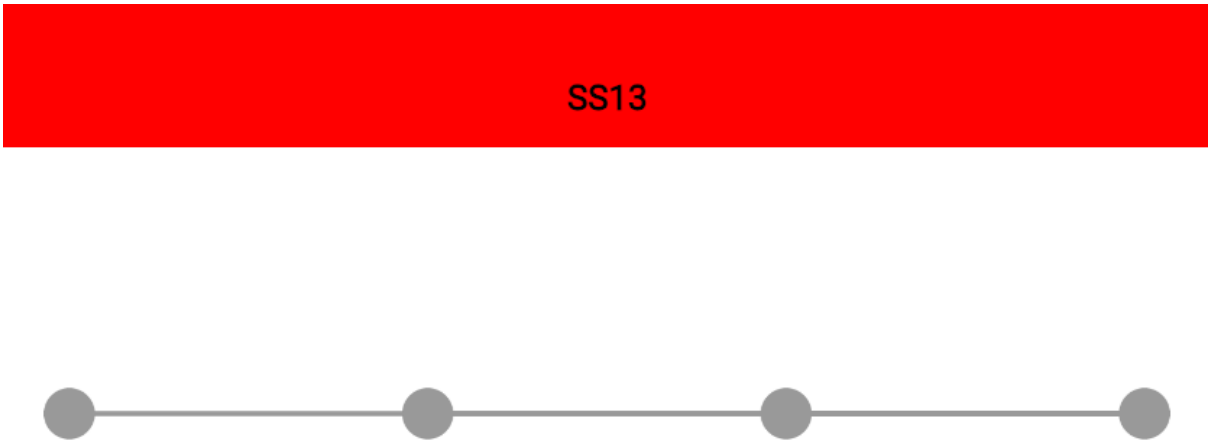


Figure 2.1

Once I had adjusted to Angular and could create small test sites, I stepped back to predict what my final digital artifact would look like once complete and began creating mock-ups (fig 2.2) of the possible finished result.

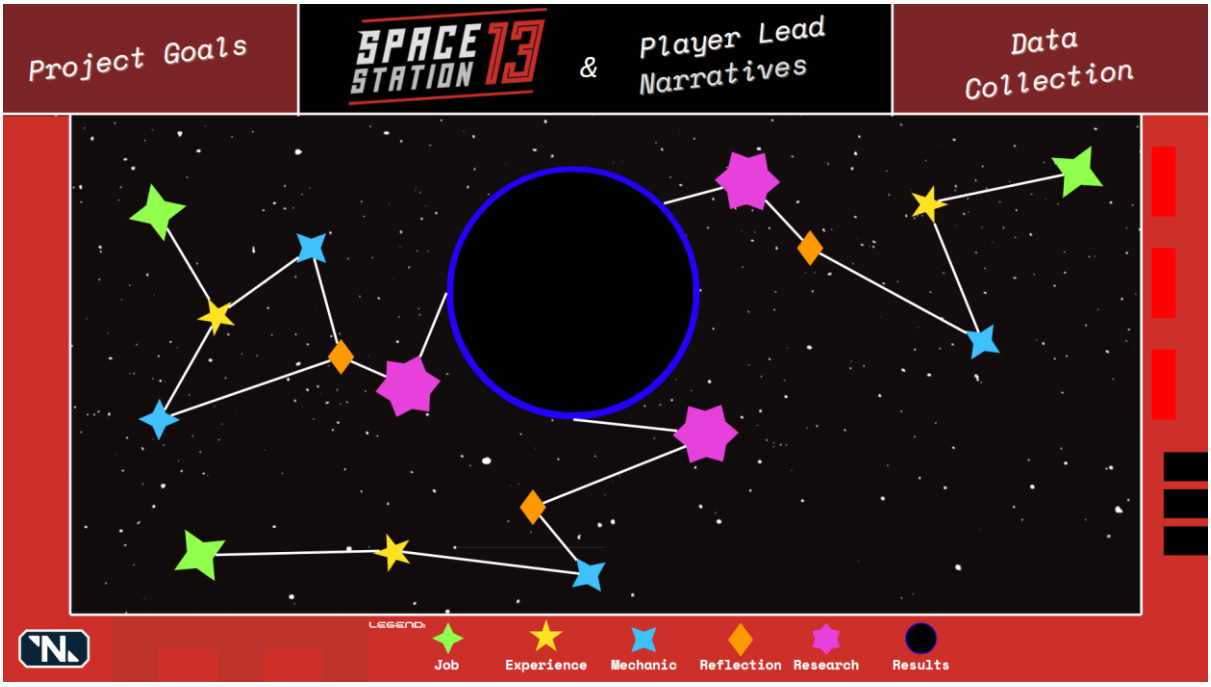


Figure 2.2

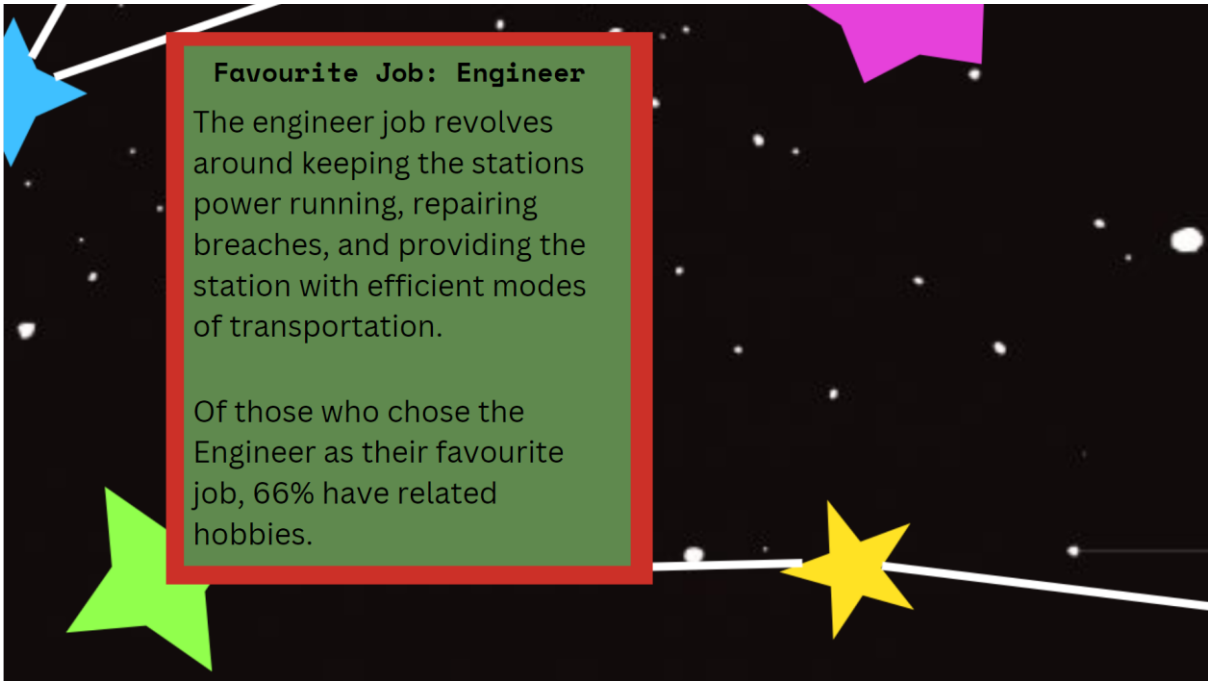


Figure 2.3

The mock-up I designed shows a stylised graph in a view box, surrounded by red styling to imitate the in-game Security PDA's, a logo at the centre of the top navbar, and a legend to describe what each node represents. My idea was to have each node, when clicked, present the user with a text box (fig 2.3), explaining what the node is, what it connects to, and its relevance. Once I had presented this mock-up to my supervisor, we researched possible graphing libraries that could be implemented into angular, settling on Cytoscape.js.

Cytoscape.js and Bootstrap

Cytoscape.js is a JavaScript library designed for implementing interactive networks and graph visualizations into web applications, and at first seemed like the ideal choice for creating the graph I envisioned. Prior to starting work on my survey, I attempted to implement simple Cytoscape graphs into my Angular test sites, but ran into many recurring issues, that continued throughout my project. During my first attempt at implementing Cytoscape into my Angular app, I followed a step-by-step guide on installing Cytoscape as an Angular module, through NPM, a package manager for JavaScript modules. This however, resulted in the first instance of Angular's steep learning curve becoming prevalent, as to directly integrate modules into an Angular app from scratch requires much more knowledge of JavaScript than what was covered in my classes which covered it, resulting in constant errors. The

documentation I followed for installing Cytoscape.js as a module was not beginner friendly either, causing further confusion alongside my lack of experience with Angular and JavaScript.

Following multiple failed attempts at implementing Cytoscape as a module, I consulted with my supervisor to discuss which steps I should take to implement my graph. Hard-set on implementing the graph using Cytoscape, my supervisor suggested exporting a Cytoscape graph made on the separate Cytoscape software as a web page and implementing that into my Angular app. Following this suggestion, I began work creating a Cytoscape variant (fig 2.4) of the mock-up graph I had previously designed, this time naming the nodes in accordance with the survey results which were now coming in.

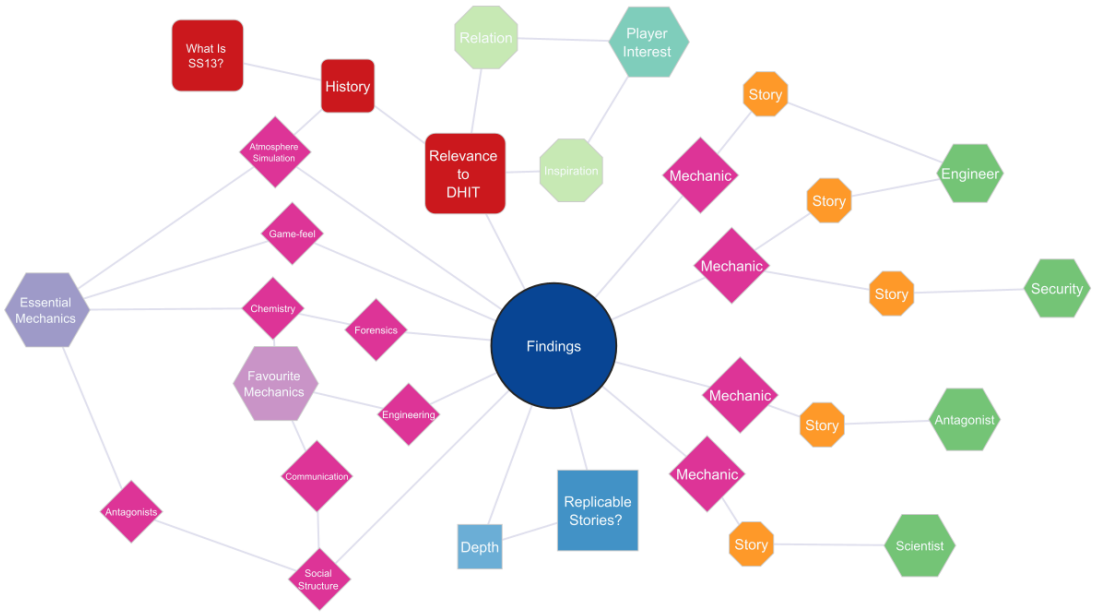


Figure 2.4

I found the Cytoscape software itself to be very user friendly, as the landing home-page shows a number of example graphs that one can examine in depth to see what stylings and functionality can be implemented natively within Cytoscape, prior to any exporting. My resulting graph contained the amount of stylised nodes that I felt were deliverable for the project due-date, as each node resides in its respective sector of the page, each sector converging towards the centre point. How I envisioned this graph to inform users of my findings, was to have the left sector, featuring the 'Essential Mechanics' and 'Favourite Mechanics', consist of answers directly given

by users with little initial analysis performed on them, and the right sector, featuring users favourite jobs, stories created from playing as those jobs, and mechanics present from those stories, to consist of replies analysed by me, so that when both sectors meet in the centre, there is a healthy balance between what the community finds essential to Space Station 13's game-flow, and what I find to be essential to its game-flow post analysis.

Once this graph was completed, I began working on stylising my Angular app to represent what I had created in my mock-up, so that my Cytoscape graph had a fitting environment for me to export it to. To stylise my Angular app, I decided to use Bootstrap, a CSS framework for front-end web design. Bootstrap was unique in this project, in that many of the features it offered could have been implemented much easier, had I prior knowledge of using Angular, as the initial learning curve, while confusing, was fine once I had gotten over it. To stylise my Angular app, I wanted to have a constantly glittering, but not overly distracting, space background, and a red navbar featuring a logo of my own creation, in reference to the in-game PDAs, both elements which were implemented with the use of Bootstrap. Beginning with the space background, I found that accessing the Space Station 13 open-source textures would be a huge asset, as it meant I could spend less time searching for royalty free backgrounds that would likely not fit every aspect ratio. Within the Github for the Goonstation branch of the game, I pulled a parallax gif background asset that would scale to any screen size, given its pixel art aesthetic, and integrated it into my Bootstrap stylings. Following the background integration, I began working on a logo (fig 2.5) that was reflective of the existing Space Station 13 logos, while also making it unique to this project. Once my background, logo, and navbar had all been implemented (fig 2.6), I could begin importing my Cytoscape graph.

Figure 2.5

Figure 2.6

Importing my Cytoscape graph to this Angular app was where issues began to arise again, as Bootstrap began clashing with Cytoscape. A recurring issue that sprouted here was the constant layering of the Bootstrap background above the Cytoscape graph, regardless of which z-level stylings were assigned to either one of them. There was no documentation, or even forum posts online covering this issue, as it seems that few people have even attempted to add backgrounds to imported Cytoscape graphs within Angular, meaning that I had to debug this issue myself. I

began, like I mentioned before, assigning different z-index values to both, but this seemed to not affect either of them. I then attempted to manually stylise the Cytoscape graph's background, assigning it to be translucent in the graphs' stylings, but this also had no effect on the graph or backgrounds visibility. After countless hours of attempting to style the graph, or outright removing Bootstrap, the answer revealed itself by total accident. While trying to fit the logo to hang below the navbar, I had moved it outside of the 'a' tag within the bootstrap 'div', placing it below the navbar, but visible behind the Cytoscape graph. With this newfound knowledge, I reversed this to contain the gif background within the navbar tag, while having it visible behind the graph nodes, but concealed by the red navbar. While this discovery sounds simple, it was a monumental issue with the implementation of Cytoscape alongside Bootstrap, as presenting just the graph without stylings would have been too basic, and presenting the stylised app without the graph functioning would have been pointless, so locating the issue myself and repairing it was a high point of the artifacts' development process. The app looked presentable (fig 2.7) and could finally have proper functionality implemented.

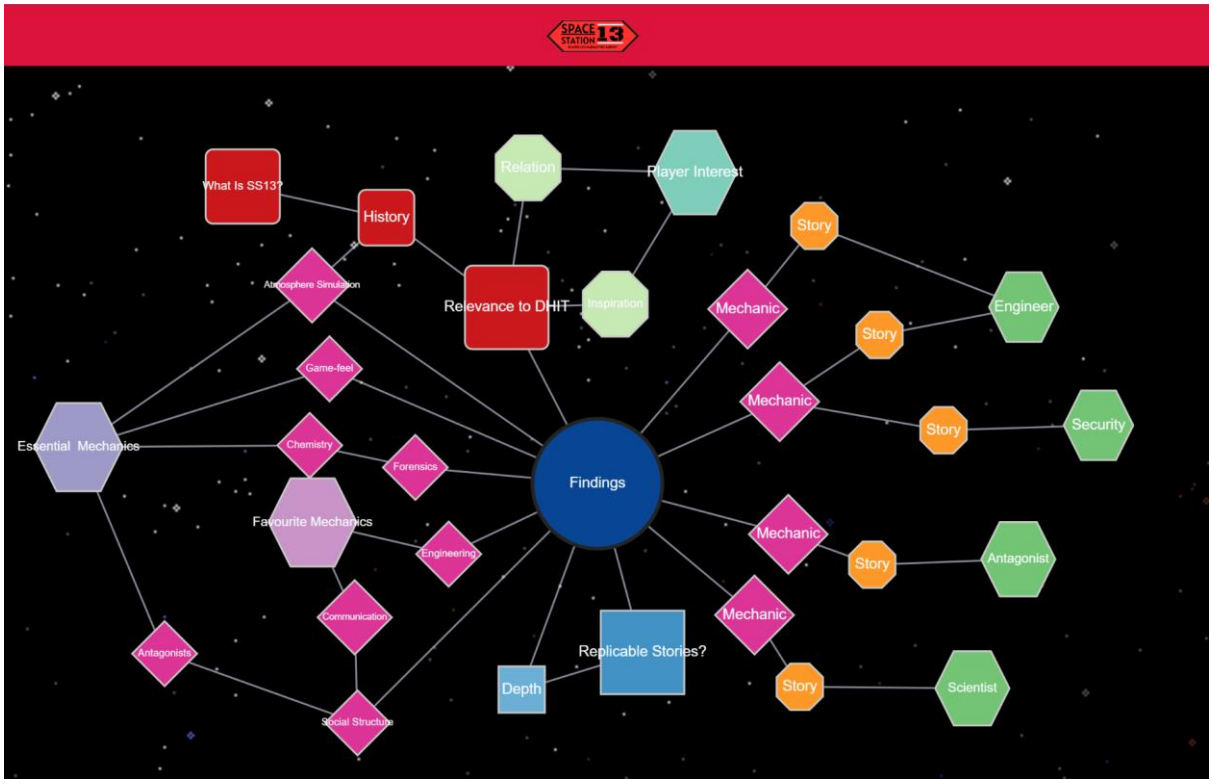


Figure 2.7

Following this success was one of the toughest challenges I was faced with during this project, being the implementation of functionality to the Cytoscape graph within Angular. Given that I had exported the graph as simple web ts and html files, there was already a roadblock present in the form of following Cytoscape.js documentation with an alternatively imported graph, but even when properly implementing the interactive elements present in other Cytoscape graphs, the clashing between Bootstrap and Cytoscape was further preventing the interactivity to function. This issue was prevalent for many of the weeks leading up to the due date of the project, even clashing with the open day, where these projects were to be demonstrated, my graph unfortunately still lacking functionality on the day. My primary goal was to have text boxes explaining the nodes appear alongside them when clicked, but this was proving very difficult, as each new script that I attempted to implement would bear no results. Prior to my final graph and tool implementation, I will describe the process in which I surveyed the Space Station 13 player base.

Google Forms and Ethical Approval

To gain an understanding of what the Space Station 13 player-base thought of the game and its mechanics, rather than analyse multiple game forums and discord servers, proposed a survey which would return results relevant to my research question. Proposing a survey for this project meant I had to undergo the ethical approval process, to ensure that the survey would be conducted in an ethically sound, and college appropriate manner. Following the application form used by the School of English and Digital Humanities, I began structuring a survey, narrowing down where I could distribute it, and predicting the possible answers to compare to the final results. The approval form began with a self-evaluation, ‘yes or no’ section, with 21 questions. Although my survey would be covering entirely a player-bases’ reflections on a video game, some of these questions helped me understand why other projects may have to think hard about how their survey could impact people ethically, ‘will participants include people in custody’, ‘is there a realistic risk of the researcher experiencing either physical or psychological distress?’, questions irrelevant to my project, but were perfect for raising my awareness as to why seeking ethical approval was necessary. My reasoning for seeking ethical approval was to ‘survey players of the online game Space Station 13 to gain insights into why the game is so successful at creating player led narratives with its unique mixture of in-

depth mechanics', a statement which still holds true following the completion of the survey.

I then listed my questions, ranging from where the players found out about the game, what their first experience playing the game was like, what their favourite job to play is, their opinions on the mechanical depth of the game, and if the game related to any other hobbies of theirs. I feel as if completing my set of survey questions helped me narrow down exactly what I wanted from this project, which assisted with the creation of the Cytoscape graph I would have settled on. Following the survey questions was a section asking about the data I would be collecting and how I would implement it. This was also made easier by settling on my set of survey questions, as it allowed me to categorize my questions into long form answers that required text analysis, and short form answers to compare users' thoughts and experiences. With the knowledge that I would be storing these individual answers in mind, I made it a requirement in my survey that users must consent to taking part in the survey once they have stated they are 18 or older, and have read the description of the project goal, along with how their answers would be anonymously displayed. This ethical approval form took two attempts to have it accepted, something which at first confused me, be in hindsight was understandable, as my first draft of the approval form contained multiple instances of indecisive language, constantly using 'like' or 'possibly', when I should have been direct when describing my approach to the survey. Once I had my ethical approval submitted and approved, I began formatting my survey and choosing where to distribute it.

While tools like SurveyMonkey exist as great ways to conduct surveys for research projects such as this, I found that Google Forms offered exactly what I needed to perform this survey, while keeping users anonymous, as well as offering ease of use as I could create the survey from my student email account. Google Forms also offers basic analytical graphs to better convey my results, alongside an option to directly bring my results into Excel, making it the ideal choice for presenting my survey, while enabling me to analyse the results without issue. Once my survey was ready, with all the descripting files attached, I was ready to choose where it would be distributed. My initial idea was to distribute it on the Goonstation codebases' discord server, but this approach would be both ineffective and possibly ethically ill-advised, as presenting a college project survey on an open, casual discord survey could cause

a multitude of issues for me and the college. Distributing the survey on discord would also hugely impact the quality of answers I would receive, as many users could not take the survey seriously, or could submit random or spam answers at will. With this risk in mind, I decided to ask an administrator from the server about their policies on surveys on both the discord server and their online forums, with the admin commenting that while both were allowed, it would be advisable to stick to the codebases' online forums, as those catered towards long form discussions of the game, rather than groups of people messaging into a single channel. With this in mind, I created a profile on their public forums and released the survey, inviting any with even a passing interest in the game to spend a few minutes answering some questions, to contribute to a digital artifact exploring the games' mechanics.

In total I received 21 usable responses to my survey, which was more than enough to analyse and complete my project goal. While some survey results were expected, many of them surprised me, and worked out to be valuable data that could contribute to answering my project question. Going through each question and summarizing the results is worth doing before discussing the final tool I used in this project, as it helps explain why each graph node connects, and where they are represented on the graph. My first question, following the consent to participate in the survey, was a multiple-choice question asking players where they found out about Space Station 13 (fig 2.8). A majority 47.6% of users said they found out about Space Station 13 through YouTube, which was unsurprising given the boom in popularity the game received in 2019-2020 when multiple YouTubers with solid fanbases covered the game in both long and short form content. The second most chosen answers was 'through a friend', which further exemplified how Space Station 13 has been a niche title for a long time, with the YouTube coverage I mentioned before being the only form of pseudo-advertising the game has received in many years. The next question prompted users to describe their first experiences with the game, which role they chose, what happened during the round, etc. I can happily say that I was pleasantly surprised with the multitude of both basic and chaotic answers to this question, ranging from one user saying they played as the Quartermaster with no idea how to perform their job, resulting in them wandering the station, a common first round for many players, to another user claiming they joined as a staff assistant, were pulled aside and experimented on by the geneticist, who then transformed them into a

monkey, resulting in the security team executing them due to a ‘rampant monkey infestation’, likely relating to the geneticists experimenting on clueless players. This range of answers was reflected again in later questions, which further reinforced why I chose to approach this project, as with just 21 answers I was already seeing a range of interesting player narratives within players’ first rounds. This first section of the survey was categorized as ‘Player Experience and Introduction’, and covered the basics of what I needed when discussing players first experiences with the game.

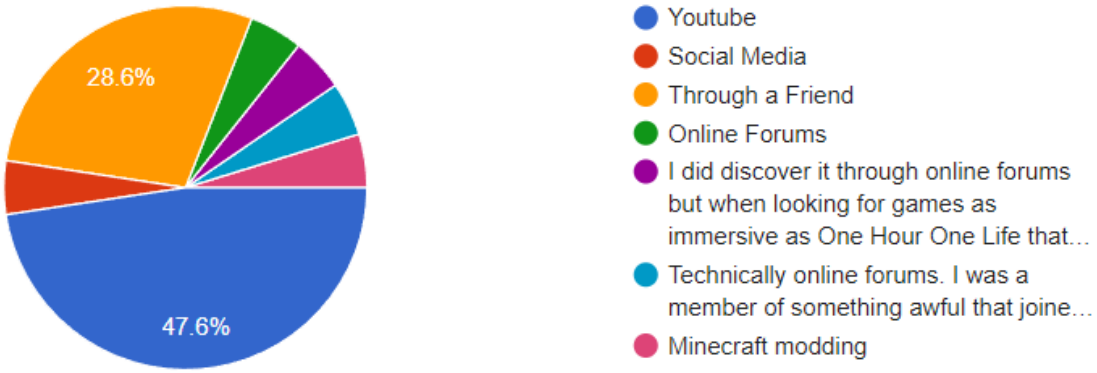


Figure 2.8

The following section of the survey was titled ‘Enjoyment of Space Station 13’ and aimed to cover what players enjoyed about the game through what they claimed to be their favourite mechanics, jobs and stories related to these jobs. By ask these questions I could determine and compare what players believed to be their favourite mechanics in the game, against the mechanics present in their memorable stories, to see if there is any overlap or contrast. From the 21 responses, 13 jobs were mentioned, those being the stations AI, the Staff Assistant, the Antagonist, the Captain, the Chef, the Clown, the Scientist, the Medical Director, the Roboticist, the Security Officer, the Botanist, and sharing the position of most common favourited jobs, both at 3 answers, were the Engineer and the Head of Security. This wide range of jobs meant that the following section covering favourite stories related to those jobs would be diverse enough to allow more varied data to be extrapolated following their analysis. Before jumping to that section, the question asking what users believed their favourite mechanics, related to their favourite jobs, was next, with a varied mixture of serious and comedic answers given. While some players preferred the comedic role-playing mechanics present, such as the integration of clumsiness as

a genetical trait, or the trespassing, in relation to social hierarchy, to cause mischief, many users' favourite mechanics were the in-depth and complex job specific mechanics. Two examples of which were the surgery mechanics and the chemistry systems.

Despite its very simple graphics, Space Station 13 boasts a complex surgery system, where each player has vital organs that all interact with each other, while responding to whatever the player is doing. For example, if a player were to eat too much greasy food during the round, they could cause heart palpitations, or if a player was to lose an eye in a workplace accident, one half of their screen becomes abstracted until they visit the med bay to undergo surgery. Surgery allows doctors in game to manipulate and repair other players' vital organs, even allowing for limb or organ transplants if there is a suitable limb or organ to transfer. The system can enable creative players to swiftly heal other crew members, while allowing them to experiment with what the surgery mechanics allow, such as replacing limbs with cyborg alternatives, like tread-legs or robotic arms, to allow crewmembers to perform their tasks more efficiently.

Chemistry is the sister mechanic to surgery, as many of the medicines and poisons related to the surgery mechanic are produced by the scientist role within the science lab, using Space Station 13's simulation of a periodic table. The chemistry mechanic gives players access to an array of chemicals that they can mix and match freely, or in accordance with a recipe. The freedom this mechanic allows for its players often results in fires, explosions, or toxic gas cloud occurring within the science lab, but experienced players can create all kinds of chemical compounds to assist or dismember their fellow crewmates. The freedom offered by chemistry and surgery are why I believe them to be the most popular mechanics among players in this survey, exemplified further by the users' favourite stories related to their job of choice.

The final question in the enjoyment section of the survey, and probably the most vital to this project, covers the users' favourite and most memorable rounds in relation to their favourite jobs. This was also the section where the absurdity and narrative capabilities of Space Station 13 as a narrative tool became clearer, as the supplied stories were nothing short of turbulent. From users illegally selling narcotics that they brewed in the science lab out of a bathtub, to cooking

competitions among chefs who had their competition cut short due to the clown producing chili that was so hot that those who consumed it “turned into ash”, the majority of the answers, while totally off the wall in what they describe, perfectly encapsulated why I chose this as my research project, as for these stories to occur naturally, relying entirely on player intuition and how they interact with the mechanics presented to them, is undeniable proof that the Space Station 13 sandbox is a robust literary tool worth analysing.

The following section, titled ‘Mechanics, Systems and Comparison’, covers what the players believe the mechanical difficulty of the game to be, if they believe what occurs in Space Station 13 can be replicated in another current game, and what they find to be an essential mechanic to the games’ flow. Of the 20 responses, just 10% (fig 2.9) of players believed that the stories that occur in Space Station 13 could be replicated in another game, a short question which was relevant to mention as it exemplifies how unique Space Station 13 is in the sandbox multiplayer game space.

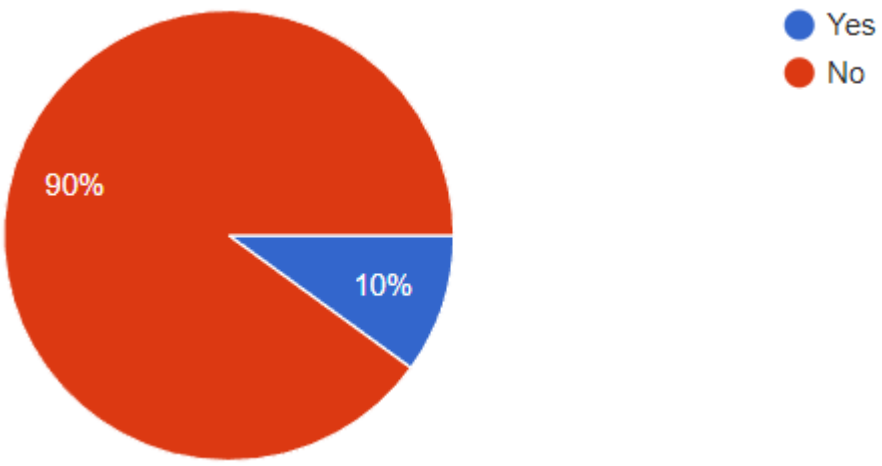
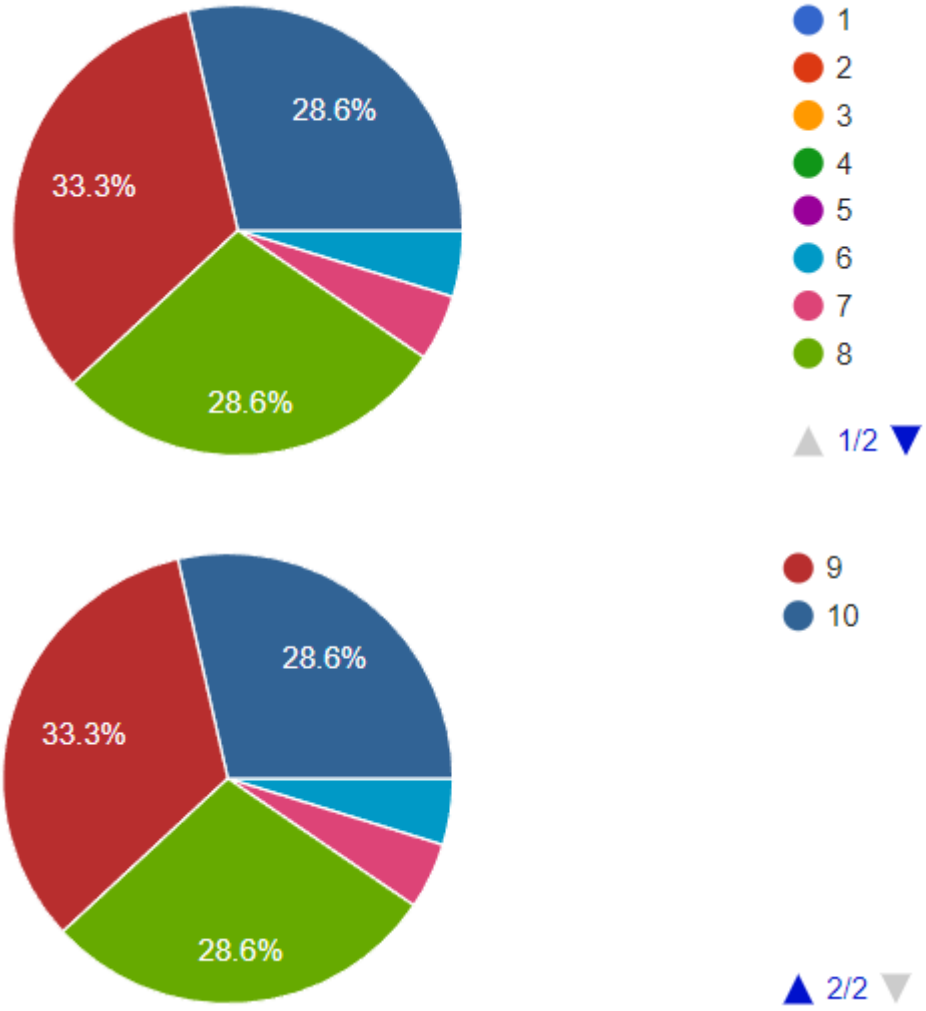


Figure 2.9

Answers became more varied in the following question, where users were asked where they would rate Space Station 13’s mechanical depth on a scale of 1 – 10 (fig 2.10 & 2.11). Of the 21 responses, 19 of which scored the mechanical depth of the game 8 and above, a third of all respondents scoring it a 9. This question, while simple, was also relevant to ask, as it provides a commonly held opinion on the game’s mechanical complexity, outside of me just claiming that the game is mechanically deep.



Figures 2.10 and 2.11

The final question from this section asked what players believed to be the most essential mechanic or system to the game flow of Space Station 13 to be, and why. Once the answers had been analysed, I had deduced that the mechanics that players felt were essential to the game flow of Space Station 13 were the chemistry system, the atmospheric simulation, the antagonist system, the social structure, and, strangely enough, the archaic movement and combat systems. While some of these answers were expected, such as the social structure that has a presence in every available job, or the antagonist system which brings conflict to the station, the atmospheric simulation and game-feel were not expected answers, but make total sense when put under the lens of someone role-playing in a space station environment that is rich in mechanics, as both systems together force the player to constantly remind themselves that they are onboard a space station where a minor slip up or mistake

could result in their death, but that breaking a window or slipping out an airlock. To finish off the survey I presented users with a player interest section, to gauge if Space Station 13 was related to a hobby or skill of theirs, or if it had inspired any interests in STEM, given the games heavy reliance on simulation in its mechanics.

In the final 'player interest' section I asked only two questions; does space station 13 relate to any of your other hobbies and has space station 13 sparked your interest in any new skills or hobbies, both questions I had in mind at the beginning of the project, given how Space Station 13 has inspired my interest in creative writing and open-source game development. Of the hobbies players found Space Station 13 related to, the most common were role-playing, problem solving, computer programming and space/sci-fi. Given my time within the community, the only answer I found surprising was the problem-solving answers, as I had not made the correlation between the in-game logic system, MechComp, designed to allow engineers to create all sorts of mechanical objects, or DWAINE, the in-game computer terminal system which manages files and scripts during rounds, and genuine problem solving.

The final question in the survey also had some interesting answers, as most of which I could not predict given the multitude of different reasons one would play Space Station 13. Although some were not influenced by Space Station 13 to take interest in new hobbies, those that were mentioned, being programming, physics, creative writing, pixel art, and grammar were interesting to take note of in relation to my literature review. The most interesting answer to come from this section of the survey was one user's interest in ideal gas law and triage medication treatment being sparked from playing Space Station 13, an invaluable answer to the analysis and reflections section later. The survey was a profound success in my eyes, as if provided me with a range of rich answers with which to display and analyse.

Vis.js

Following the open day, my primary goal was to add functionality to my Cytoscape graph, which quickly turned from a possibility to a fool's errand, as after countless attempts at reading documentation, consulting my supervisor and even other Angular users, it seemed that the method in which I imported my Cytoscape graph was near impossible to add Cytospace.js functionality to at my JavaScript skill level. I had

considered handing in the artifact with its functionality attached to a different web page, but I knew there had to be a much simpler alternative to that. After researching alternative graphing libraries that could function within Angular, I found Vis.js, a browser-based visualisation library that could replicate the look of my existing Cytoscape graph, while containing the functionality I required. I began experimenting with Vis.js in what little time I had left to complete my digital artifact, and the ease of use in comparison to Cytoscape was night and day. The Vis.js documentation was much more user-friendly, and allowed me to add functionality to my graph, while keeping my nodes connected and named. Replacing Cytoscape with Vis.js (fig 2.12) so late into my project was a risky move, but proved to be exactly what I needed to produce a graph that visualised my findings.

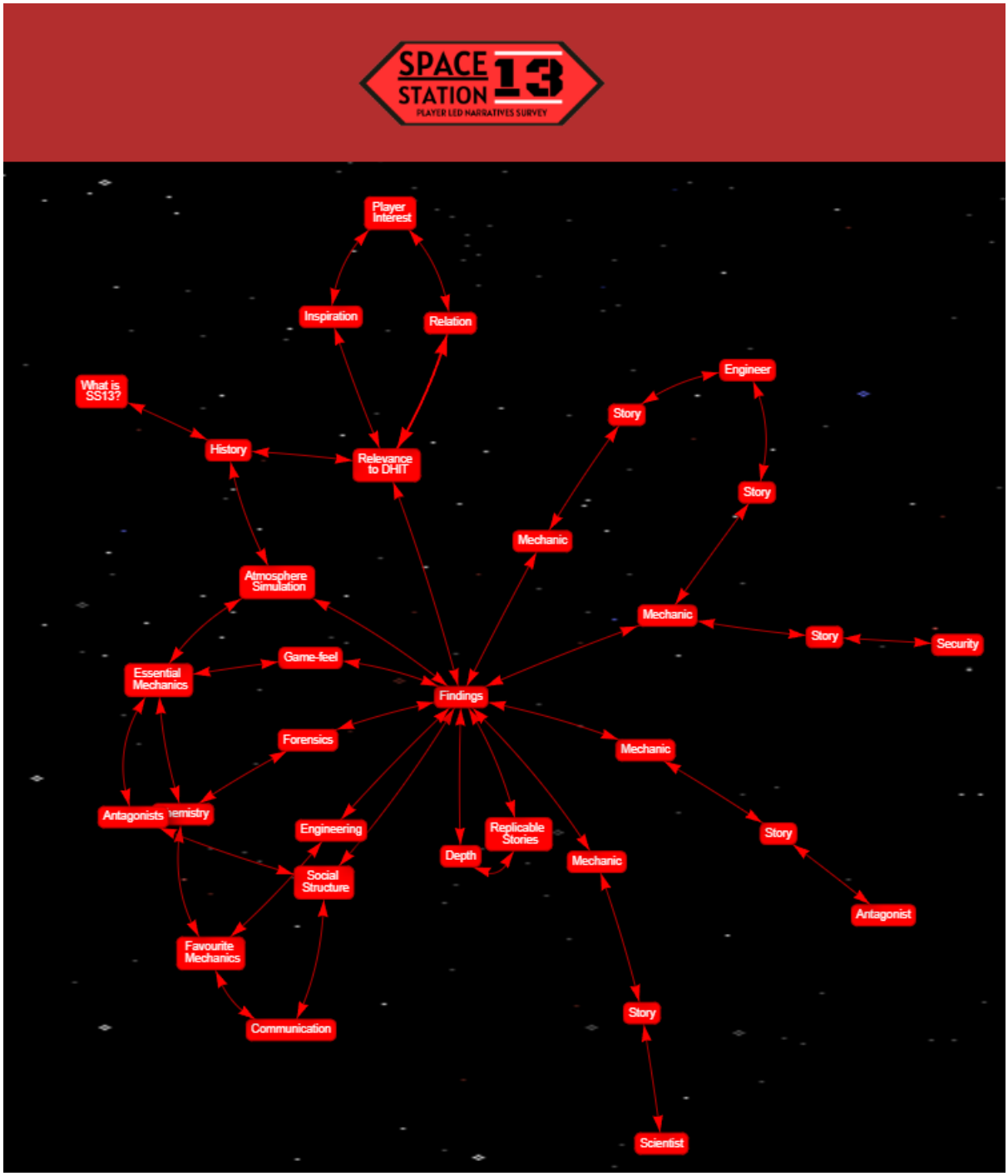

SPACE STATION 13
PLAYER LED NARRATIVES SURVEY
Player Interest
Inspiration
Relation
What is SS13?
History
Relevance to DHIT
Engineer
Story
Story
Mechanic
Atmosphere Simulation
Mechanic
Story
Security
Game-feel
Essential Mechanics
Findings
Forensics
Mechanic
Antagonists
Engineering
Replicable Stories
Depth
Mechanic
Story
Social Structure
Antagonist
Favourite Mechanics
Communication
Story
Scientist

Figure 2.12

Section 3: Analysis and Reflection

Survey

Following the completion of my digital artifact, I could finally begin explaining my analysis and reflecting on what I done during this project, what I could have done better, what I could have implemented, and what I would have done differently had I the chance to do it again.

Beginning with my survey, once my survey results were collected, I began analysing each story the participants provided, comparing them to the set mechanic answers, with the goal of determining which mechanics were essential to mention and discuss in my digital artifact. In terms of mechanics relating to the stories, I narrowed the relevant stories down to just 5 stories, with 4 mechanics representing them in the final version. The jobs from which these stories originated were Engineer, Security, Antagonist and Scientist. I chose Engineer to appear in the final artifact as the Engineer plays a huge role in every game of Space Station 13, and are one of the most important players in keeping the station afloat as they tend to the stations respective engine, a component that, if mismanaged, could result in the total destruction of the station, a point reflected in the stories provided by two participants.

I then chose the Security job to appear in my final artifact due to the role it plays in the social hierarchy of the station, a mechanic mentioned by participants to be both relevant and enjoyable to interact with. Security is the first line of defence against wrongdoers aboard the station, meaning that they must be in constant communication with every sector of the station, often making them key players in stories surrounding Space Station 13, which is reflected in the accompanying story present on the artifact. Security is an upholder of the station's social hierarchy and are the first line of defence against the next role present on my final artifact, the Antagonist.

Antagonist is an umbrella role consisting of multiple types of antagonists that can be aboard the station, like agents from rival corporations or sci-fi inspired monsters. I found Antagonists to be relevant to my final artifact as they are often a force that encourages other members of the station to work together, as antagonists can cause all sorts of mischief and chaos depending on which randomly assigned tasks they

receive. Having the force that encourages players to work together *be* a player has led to many interesting player stories in Space Station 13, and they are often the most interesting role to rewatch rounds of, as a good antagonist can bring a whole station of players to ruin depending on their mechanical knowledge or role-playing prowess. Mechanical knowledge is especially relevant to the final role I featured on my digital artifact, the Scientist.

The Scientist, like the Engineer, deals with one of Space Station 13's most in depth and impressive mechanics, in this case it is the chemistry mechanics. Like I previously mentioned, chemistry allows players to experiment with a simulated periodic table of chemicals, with every scientist having free reign to experiment with them as they wish. This can often lead to outlandish occurrences on the station, such as in the case of the story provided in my artifact, a failed canister bomb experiment taking out the science wing of the station. Allowing players to freely interact with a multi-layered mechanic that could aid or destroy the entire station at any given moment is a dangerous but rewarding experience for those who interact with it and has created many interesting player stories in the Space Station 13 community.

The survey, in my experience, was huge success for my project, and provided all the data I needed to answer my research question, while allowing me to represent my findings in a readable manner. If I were to do anything different with my survey, I would have shortened the question covering the participants initial experience in Space Station 13, as while it provided useful information, it was not hugely relevant to my digital artifact.

Digital Artifact

My digital artefact underwent several different versions during its development, and was surely a huge undertaking for me, given my lack of experience with JavaScript. Angular was totally new to me, and I found it to be a useful and robust tool for what I wanted, if just excessive in its functionality, as much of the documentation and tutorials cover elements that I could not have worked with due to the timeframe I had and lack of experience. Attempting to implement modules from scratch was an unforeseen time sink I could not have predicted before starting this project but was thankfully cut short when I began importing libraries, rather than making my own custom modules. While many of my setbacks while creating my artifact happened

within Angular's framework, I can safely say upon completing my project that it was never the cause of any setbacks, merely the approach I took to creating my artifact was at fault. If I were to do anything different with my approach to choosing a framework to build my artifact up from, I would have further researched other frameworks such as React, to compare the ease of use for JavaScript novices such as myself.

Cytoscape is a difficult part of this project to discuss in relation to my digital artifact, as it may have been the single greatest cause for frustrations from the moment I began implementing it. Cytoscape on first glance can give the impression that its interactivity can be very flexible, which it absolutely can be, but seemingly not for a humanities project such as this one. Cytoscape is first and foremost a *molecular interaction* network software platform, aimed at implementation in mathematical and scientific graphing projects. This can be hard to tell when first researching Cytoscape.js, the version compatible with Angular, as the test graphs on the Angular.js website are all attractive and interactive, boasting many different kinds of available stylings and animations. What I should have confirmed prior to implementing it into my Angular project, was if that interactivity was both available to all versions, easy to implement, and compatible with Bootstrap, my choice if CSS framework when styling my Angular app. Cytoscape is by no means a poor software or graph library, in fact it helped me visualize exactly what I wanted my final artifact to resemble, but it was not the right tool for this project, and should have been further researched before implementing it at the scale I did. Despite getting a functional, attractive graph for the DHIT open day to showcase to my peers, that was as far as the graph ever went, as following the open day was my discovery of Vis.js, the graphing library I should have implemented from the start.

Vis.js contained exactly what I wanted from graphing library; easy to import, simple, beginner friendly documentation, ease of use in tandem with bootstrap, and interactivity upon first implementation. Vis.js singlehandedly saved this project from being an attractive graph with no data to show, by turning it into a somewhat less appealing graph that can contain all my findings in a readable manner. If I had known of Vis.js prior to the open day, or done further research on alternative graphing libraries, I'm sure I could have styled the graph to reflect exactly what I was aiming for in the mock-ups, but I unfortunately ran out of time and had to work

on creating my graph in Vis.js right up until the project due date. If I were to change anything about this project, my first change would be to keep Cytoscape separate as a tool to map where I want my nodes to be, with Vis.js functioning as my mode of graphing within Angular. Given that this was an unforeseen, but great learning experience in relation to Angular and JavaScript, I retained many of my Cytoscape scripts and lines of code within my final version of the project, commented of course, as a reference point to the issues I faced with attempting to add interactivity to Cytoscape within Angular. My final digital artifact functions similarly to how I imagined it, each node being titled and connected, as to resemble a correlation of starts, each presenting the user with a box of text when hovered over. While the final version is not what I had planned it to be exactly, and locating sources to pull relevant information from was difficult given the subject matter, it functions how I imagined, while answering my proposed research question.

Section 4: Conclusion

My proposed research question was ‘How do Game Systems in Space Station 13 Influence Player Led Narratives and Choices’, and I feel after my analysis and mapping of my findings that I can answer it. Through the free choices that Space Station 13 offers its players upfront in deep, multi-layered mechanics such as Engineering and Chemistry, in tandem with mechanics that prompt players to work together without set factors to motivate them, such as the appearance of antagonists at any given time, or the constant flow of communication the players can have with each other, all supported by mechanics that players of any kind can engage with without realizing how essential they are to the flow of the game, it becomes evident that the mechanics and systems present in Space Station 13 influence players to naturally create their own stories and narratives through emergent gameplay experiences that are shaped by the relationships between player decisions, role of choice, and dynamic interactions, not only showcasing the depth and complexity of the game's design but also reflecting broader themes and concepts relevant in DHIT, in that in a vacuum Space Station 13 can be viewed as an extremely powerful narrative tool. Space Station 13 serves as a compelling case study for understanding

how digital environments can facilitate immersive storytelling and cooperative engagement, bridging the gap between role-playing in a video game and academic interests, especially within the realm of digital humanities, and as shown by the player interests' section of the survey, the realm of STEM. While my digital artifact does not reflect what I had envisioned, creating it was an exceptional learning experience that enabled me to research a topic I have been interested in for years.

Bibliography

Hodges, Duncan and Oliver Buckley. “Deconstructing who you play: Character choice in online gaming.” August 2018. *ScienceDirect*. Document. 1 March 2024. <https://www.sciencedirect.com/science/article/pii/S1875952118300053>.

Horsfall, Matthew and Andreas Oikonomou. “A study of how different game play aspects can affect the popularity of role-playing video games.” 27-30 July 2011. *IEEE*. Conference. 2 March 2024. <https://ieeexplore.ieee.org/abstract/document/6000361/references#references>.

Ishak, Shahrul Affendi, Rosseni Din and Umi Azmah Hasran. “Defining Digital Game-Based Learning for Science, Technology, Engineering, and Mathematics: A New Perspective on Design and Developmental Research.” 21 May 2020. *JMIR*. Document. 30 February 2024. <https://www.jmir.org/2021/2/e20537/>.

Owens, Trevor. “Social videogame creation: lessons from RPG Maker.” 1 February 2011. *Emerald*. Document. 2 March 2024. <https://www.emerald.com/insight/content/doi/10.1108/10748121111107708/full/html>.

Space Station 13. *Space Station 13*. 2024. Website. 21 March 2024. <https://spacestation13.com>.

Verheijen, Geert P, et al. “The influence of competitive and cooperative video games on behavior during play and friendship quality in adolescence.” February 2019. *ScienceDirect*. Document. 13 February 2024. <https://www.sciencedirect.com/science/article/pii/S0747563218305132>.