# UTILIZING RECOMMENDATION SYSTEMS TO ACHIEVE MORE PERSONALIZED THEMED EXPERIENCES

by

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# ABSTRACT

Digital platforms such as Amazon, Netflix, and YouTube demonstrate the effectiveness of recommendation systems to personalize content and drive revenue, yet themed attractions have historically offered limited personalization. This thesis explores how recommendation systems can enhance adaptive themed experiences, focusing on branching narratives and dynamic environments that respond to guest behavior. Research from literature relevant to recommendation systems, along with analyses of successful attractions and digital experiences, informed the creative solutions developed for The Nexus. In this immersive walkthrough attraction, guests pass through a magical portal into a multiverse that adapts to their preferences and actions. This research shows how integrating recommendation systems with experiential design can enhance personalization, expand creative possibilities, and provide a framework for designing adaptive themed experiences.



Key Words: Themed Experience, Recommendation System, Branching Narrative, Dynamic Environment, Adaptive Storytelling, Human–Computer Interaction

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# TABLE OF CONTENTS

## LIST OF FIGURES

# LIST OF TABLES

# CHAPTER ONE: INTRODUCTION

Robert McKee defines the protagonist as the central figure of the narrative characterized by conscious desires and their capacity to act on them (2003, pp. 136–141). Within themed entertainment, it is often asserted that the guest should be the protagonist. However, while every guest enters with their own distinct preferences and expectations, most classic attractions like Haunted Mansion (Disney, 1969) and Pirates of the Caribbean (Disney, 1967) follow predetermined narratives that unfold identically for all. Their catchy soundtracks, quotable lines, and unforgettable moments cement them as cultural icons, yet remain unresponsive.

In contrast, digital media platforms like YouTube, TikTok, and Netflix employ recommendation systems (RS) that dynamically adjust to each individual user. These systems analyze patterns to improve satisfaction, engagement, and revenue (Chen & Huang, 2024). As audiences increasingly encounter adaptive systems in digital contexts, their expectations for personalized experiences will likely extend to physical attractions. Raza et al. (2025) warns that future success in themed entertainment is dependent on the ability to deliver personalization at scale.

This thesis explores how adaptive storytelling can inform the design of more personalized themed experiences. It argues that integrating RS enhances guest agency, immersion, and overall experience. It seeks to bridge the gap between typical linear narrative of physical attractions and the digital data-driven experiences to help reframe the guest's role from passive observer to active protagonist.

This raises several key research questions:

1. How can recommendation systems enhance branching narratives, particularly within themed experiences?
2. How can current interactive design methods be used to collect the data necessary to predict guest preferences without breaking immersion?
3. How can transformative scenic methods like projection mapping and show action equipment be used to accommodate multiple narratives practically?

**Thesis Summary**

In Chapter Two, a literature review is used to create a theoretical foundation for the mathematical principles behind RS and how they can be used to enable adaptive storytelling frameworks. Research by Koren et al. describes the mathematics of content filtering and collaborative filtering RS (2009). Castro describes how RS can be used to predict group preferences rather than individuals (2018). De Lima et al. demonstrates how personality-based RS can predict preferred paths in branching narratives (2020).

Artistic analyses in Chapter Three seek to make the abstract research conducted in the literature review more concrete by highlighting mechanisms used in existing themed experiences and interactive media that future designers can use as a basis for making RS more immersive. Choose-your-own-adventure stories like Telltale's *The Walking Dead* (Ainsworth et al., 2012) and the interactive portion of Spaceship Earth (Disney, 1982) show how experiences can be personalized. Real-time examples include Valve's *Left 4 Dead* (Booth, 2008) which uses an algorithm to dynamically modulate pacing similar to the performer improvisation and show control systems found in attractions like Jurassic World: The Experience (Neon, 2025) and Turtle Talk with Crush (Disney, 2004). The implementation of multiple narratives in a single attraction

are shown through transformative scenic such as projection mapping and show action equipment as seen in Mickey and Minnie's Runaway Railway (Disney, 2020).

Chapter Four applies creative solutions derived from an analysis of relevant experiences and literature. It demonstrates how predictive models can enhance traditional themed experience designs by incorporating adaptive storytelling and dynamic environments elements. These approaches generate meaningful variations that are more likely to emotionally resonate with guests. The Nexus provides examples of how these methods can be implemented in large-scale experiences.

## Clarification of Terms

A *recommendation system* (RS) is a set of software tools and techniques that provide suggestions for items to be of use to a user which relate to various decision-making processes such as what item to buy, what song to listen to, what film to watch, or what content a social media site shares. Simply, RS rank lists of items based on a user's preferences, the context, and other factors (Ricci et al., 2011, pp. 1–35). These preferences are collected from users through *explicit feedback* such as ratings or *implicit feedback* like browsing history, searches, purchases, and even mouse movements (Koren et al., 2009).

*Adaptive storytelling* is a narrative design framework where story elements such as the plot, pacing, content, characters, and dialogue can dynamically adjust to align with an individual's behaviors and preferences (De Lima et al., 2020). This narrative structure is often associated with video games as they often adjust difficulty based on how well the player is doing or Choose Your Own Adventure novels like "The Cave of Time" where readers are

periodically given choices that result in a branching narrative (Packard & Granger, 1979). In this thesis, RS serve as the mechanism that dictates how the story guests experience is adapted.

*Themed experience* design is a multidisciplinary artform that draws upon architecture, theater, hospitality, technology, and fine arts to create environment-based narratives to convey story and evoke emotion. While most commonly associated with theme parks like Walt Disney World and Universal Studios, themed experiences can be found in exhibitions, museums, retail, zoos, and many other location-based entertainment attractions (Lukas, 2008). In this thesis, *transformative sets* are defined as any theatrical scenic element that is dynamic in some way to impact the environment and the form, mood, or function it serves. These elements can be physical (lighting, animated props, moving scenic) or digital (video, audio, interactives, media). *Immersive interactives* are any element, physical or digital, that a guest interacts with that enhance their experience while adding to the world building and narrative. In this thesis, immersive interactives are used as data-collection mechanisms for RS-based themed experiences.

# CHAPTER TWO: LITERATURE REVIEW

This chapter reviews literature relevant to the personalization of themed experiences, focusing on recommendation systems (RS), branching narrative structures, and data collection methods. This review provides a foundation to understand the methods for implementing experiences that adapt to individual users enhancing engagement, immersion, and satisfaction.

The chapter begins with an exploration of RS, highlighting the algorithms that drive their predictive capabilities including content filtering and collaborative filtering as researched by Koren et al. (2009) and affect control theory developed by Heise et al. (Kroska et al., 2023). Research on applying RS to branching narrative structures, particularly the work of De Lima et al., is reviewed to illustrate how RS can guide narrative pathways to align with guest choices and personalities (2020). Finally, methods for collecting accurate and useful user data along with their associated challenges and limitations are discussed to inform which aspects of existing attractions should be further explored in Chapter Three: Artistic Analysis.

## Predicting Preferences Using Recommendation Systems

Social media sites such as TikTok, Netflix, and YouTube host vast amounts of content, the majority of which may not be appealing or relevant to any given user. To maximize engagement and satisfaction, these platforms use RS to filter out irrelevant content based on a user's prior behavior, stated preferences, and the behavior of other similar users (Guidotti et al., 2025). However, beyond recommending what is predicted to be the most relevant content, effective RS also consider novelty to prevent repetitive suggestions, serendipity to expose users to

unexpectedly relevant content, and diversity to refine the system's understanding of that user's preferences (Raza et al., 2025).

This ability to tailor suggestions increases the likelihood of users discovering new and relevant content, enhances customer satisfaction, and ultimately drives revenue growth (Raza et al., 2025). Amazon attributes 35% of its revenue comes from its RS (AWS, 2024), while Netflix attributes revenue of $33.7 billion and its success in customer retention significantly to its RS (Sarandos et al., 2025). According to YouTube Chief Product Officer, Neal Mohan, who claimed "for more than 70 percent of the time you spend watching on Google's massive video site, you're lured in by one of the service's AI-driven recommendations" (Solsman, 2018). These examples build a convincing argument for the success of RS in other forms of media.

**Content Filtering**

Consider a film RS that predicts which movie a user wants to watch based on which genres they enjoy. To simplify, the film library is limited to five movies: *Alien* (Scott, 1979), *The Matrix* (Wachowski & Wachowski, 1999), *Star Wars* (Lucas, 1977), *Titanic* (Cameron, 1997), and *Jurassic Park* (Spielberg, 1993). For an RS to predict which film users are likely to enjoy, it must of course have information on both the media and each user. The first method is based on content filtering, which Koren et al. describes as a process which compares the similarities across multiple variables between an individual user and a particular piece of content. The premise of content filtering is the closer a user's preference are aligned to the content, the more likely they are to enjoy it. (Koren et al., 2009)

In content filtering, the variables are chosen manually by RS designers based on their relevance and accuracy. While a film RS could use a wide range of variables, or *factors*, such as release date, actors, directors, or MPA rating (G, PG, PG-13, R), this example uses a limited number of genres: action, horror, and romance for simplicity on a zero to one scale. If a user, Jane, loves action she would rate that as 1.00, hated horror would be a rating of 0.00, and is indifferent to romance she would give the rating of 0.50 which can be written as {Rating $_{action}$, Rating $_{horror}$, Rating $_{romance}$} or {1.00, 0.00, 0.50}. The RS designer rating each film for how closely it aligns with that genre, so *Alien* would be {0.50, 1.00, 0.00} as it has moderate action, strong horror, and minimal romance.

Turney and Pantel explain that this information is typically input into a factor matrix, a database structure which lists users and media with their corresponding scores (2010). The table below shows the genre ratings for five users and films with a third where the alignment is calculated.

Table 1. Visualization of Factor Matrix

| | *Alien* | *The Matrix* | *Star Wars* | *Titanic* | *Jurassic Park* |
|---|---|---|---|---|---|
| Act. | 0.50 | 1.00 | 1.00 | 0.50 | 0.50 |
| Hor. | 1.00 | 0.50 | 0.00 | 0.50 | 1.00 |
| Rom. | 0.00 | 0.50 | 0.50 | 1.00 | 0.00 |

| | Act. | Hor. | Rom. |
|---|---|---|---|
| Jane | 1.00 | 0.00 | 0.50 |
| Bob | 0.00 | 0.50 | 1.00 |
| Carol | 0.50 | 0.00 | 1.00 |
| Dan | 1.00 | 0.50 | 0.00 |
| Ellen | 0.00 | 1.00 | 0.00 |

| | *Alien* | *The Matrix* | *Star Wars* | *Titanic* | *Jurassic Park* |
|---|---|---|---|---|---|
| Jane | ? | ? | ? | ? | ? |
| Bob | ? | ? | ? | ? | ? |
| Carol | ? | ? | ? | ? | ? |
| Dan | ? | ? | ? | ? | ? |
| Ellen | ? | ? | ? | ? | ? |

Koren discusses how alignment between a user and the content can be visualized as the angle between two vectors drawn from the origin. The image below illustrates the alignment between Jane and Alien's genre factors. The dimensionality of the graph is based on how many factors are being calculated, so if two genres were being compared, this would be a 2D graph, and if three genres were being compared, it would be a 3D graph. This creates a limitation with this method as graphs above three dimensions cannot be accurately visualized. (Koren et al., 2009)

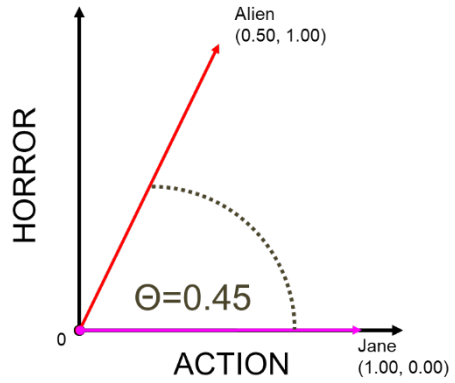


Figure 1. *Alien* vs Jane's Genre Factors, 2D. Original Graphic: McGowan, 2025

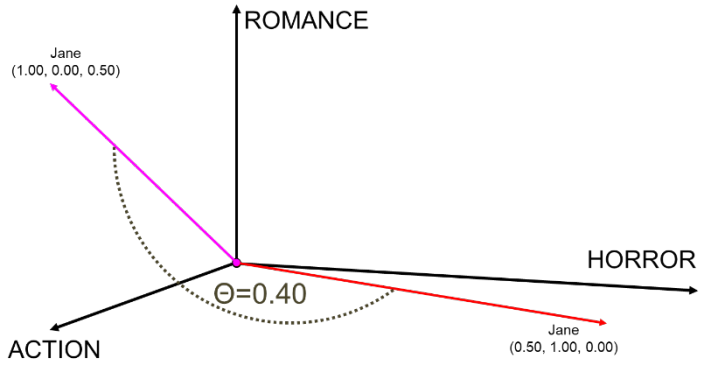


Figure 2. *Alien* vs Jane's Genre Factors, 3D. Original Graphic: McGowan, 2025

In the examples above, the magnitude of the angle (Θ) is indirectly proportional to the alignment between the content and user, meaning that the smaller the angle, the closer the

alignment. In the example below, the angle between Jane and *Alien* is compared to Jane and *The Matrix*.

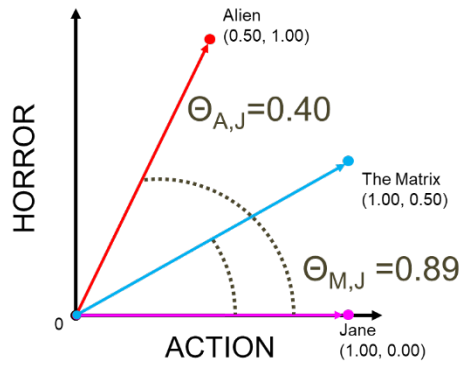


Figure 3. *Alien* vs Jane's vs *The Matrix* Genre Factors, 2D. Original Graphic: McGowan, 2025

The smaller angle between Jane and *The Matrix* shows that it has a greater alignment than Jane and *Alien,* meaning Jane is more likely to enjoy *The Matrix*. While visualizing content filtering and alignment visually makes this process clearer, this does help to complete the table efficiently. To do so, Turney and Pantel recommend using the cosine similarity function which algebraically calculates the cosine of the angle between two factors. Using the cosine function is useful as it is bound between zero and one and gets larger as the angle shrinks and is presented in the form below:

$$Cosine\ Similarity = \cos(\theta) = \frac{\vec{A_i} \cdot \vec{B_i}}{||\vec{A_i}|| \times ||\vec{B_i}||} = \frac{\sum_{i=1}^{n} \vec{A_i}\,\vec{B_i}}{\sqrt{\sum_{i=1}^{n} \vec{A_i}^2}\sqrt{\sum_{i=1}^{n} \vec{B_i}^2}} \quad (1)$$

where θ is the angle between the user factor ($\vec{A_i}$) and the media factor ($\vec{B_i}$), $\sum_{i=1}^{n}( )$ is sum of all features from $i$ to $n$. In simplified terms, this equation means that each pair of related factors (e.g. a user's preference for action and a film's action level), adding all the results, then dividing that number by the total magnitudes of the two datasets. This results in a number between

zero and one which can be thought of as what percentage of similarity the user is to the content.

The cosine similarity equation is then applied to each user-themed pair to determine how well aligned each user is to each film. To predict Jane's rating for Alien the cosine similarity would be calculated using the values for Jane's preferences of {1.00, 0.00, 1.00} and *Alien's* factors of {0.50, 1.00, 0.00} with the calculation is shown below.

$$\text{Cosine Similarity} = \frac{\sum_{i=1}^{n} A_i B_i}{\sqrt{\sum_{i=1}^{n} {A_i}^2} \sqrt{\sum_{i=1}^{n} {B_i}^2}}$$

$$= \frac{(Alice_{act} \times Alien_{act}) + (Alice_{hor} \times Alien_{hor}) + (Alice_{rom} \times Alien_{rom})}{\sqrt{{Alice_{act}}^2 + {Alice_{hor}}^2 + {Alice_{rom}}^2} \times \sqrt{{Alien_{act}}^2 + {Alien_{hor}}^2 + {Alien_{rom}}^2}}$$

$$= \frac{(1 \times 0.5) + (0 \times 1) + (0.5 \times 0)}{\sqrt{1^2 + 0^2 + 0.5^2} \times \sqrt{0.5^2 + 1^2 + 0^2}}$$

$$= \frac{0.5}{\sqrt{1.25} \times \sqrt{1.25}}$$

$$= 0.40$$

The value of 0.40 represents a relatively low correlation between Jane's preference and *Alien*. Calculating the cosine similarities between each user-film combination can be automated through programs like Excel using the following formula: =SUMPRODUCT(A1G1:A1G3, (B1G1:B1G3) / (SQRT(SUMSQ(A1G1:A1G3)) * SQRT(SUMSQ(B1G1:B1G3))) where A is the user, G is the genre, and B is the film. Each value is placed in the table below.

Table 2. Visualization of Factor Matrix, With Calculations

| | *Alien* | *The Matrix* | *Star Wars* | *Titanic* | *Jurassic Park* |
|---|---|---|---|---|---|
| Act. | 0.50 | 1.00 | 1.00 | 0.50 | 0.50 |
| Hor. | 1.00 | 0.50 | 0.00 | 0.50 | 1.00 |
| Rom. | 0.00 | 0.50 | 0.50 | 1.00 | 0.00 |

| | Act. | Hor. | Rom. |
|---|---|---|---|
| Jane | 1.00 | 0.00 | 0.50 |
| Bob | 0.00 | 0.50 | 1.00 |
| Carol | 0.50 | 0.00 | 1.00 |
| Dan | 1.00 | 0.50 | 0.00 |
| Ellen | 0.00 | 1.00 | 0.00 |

| | *Alien* | *The Matrix* | *Star Wars* | *Titanic* | *Jurassic Park* |
|---|---|---|---|---|---|
| Jane | 0.40 | 0.91 | 1.00 | 0.73 | 0.40 |
| Bob | 0.40 | 0.54 | 0.40 | 0.91 | 0.40 |
| Carol | 0.51 | 0.73 | 0.80 | 0.91 | 0.20 |
| Dan | 0.87 | 0.91 | 0.80 | 0.55 | 0.80 |
| Ellen | 0.89 | 0.41 | 0.00 | 0.41 | 0.89 |

In this simplified scenario, Jane is very unlikely to enjoy *Alien* (0.40) or *Jurassic Park* (0.40), somewhat likely to enjoy *Titanic* (0.73), likely to enjoy *The Matrix* (0.91), and very likely to enjoy *Star Wars* (1.00), so the RS serves her *Star Wars*. Carrying through this process results in Bob and Carol being recommended *Titanic*, Dan being recommended *The Matrix*, and Ellen having equal recommendation vales for both *Alien* and *Jurassic Park*.

While this system is simplified compared to a modern RS, it demonstrates the core mechanics to content filtering, common across entertainment and online shopping. An exploration of accurate data collection methods such as questionnaires and gameplay is explored later in the literature review which informs the experiences that are analyzed in Chapter Three. In the context of themed experiences, an RS could be used to predict which attractions a guest would prefer or modify aspects of an attraction to more closely align to guest preference using methods like projection mapping and show action equipment described in the artistic analysis section.

**Collaborative Filtering**

While content filtering is effective at finding correlations between users and content, it "require[s] gathering external information that might not be available or easy to collect" such as the simplified example previously discussed (Koren et al., 2009). Collaborative filtering supplements explicit feedback factors like ratings with user behaviors such as viewing duration, frequency, and time of day to discover unexpected patterns (Raza et al., 2025). Collaborative filtering uses the premise that users who have shown similar preferences in the past will likely share similar preferences in the future (P. Wang et al., 2019). This principle was popularized in Koren's paper *Matrix Factorization Techniques for Recommender Systems* which suggested using ratings from users with similar behaviors to infer future user preferences (2009).

Like content filtering, collaborative filtering finds correlations between users and items, but rather than depending on factors that are labeled and understandable like genre and release date, underlying dimensions that are not explicitly labeled or predefined referred to as latent factors can be used to predict preferences. Koren describes how "discovered factors might measure obvious dimensions such as comedy versus drama, amount of action, or orientation to children; less well-defined dimensions such as depth of character development or quirkiness; or completely uninterpretable dimensions" (2009).

Again, these theoretical definitions can be difficult to internalize without seeing concrete examples. So, this will be demonstrated with the same film library used previously, but instead of users rating their preference for a variety of genres, they rate films directly. Since no one watches every title, there will inevitably be missing entries represented in the table below:

Table 3. User Ratings Of Various Films

| | *Alien* | *The Matrix* | *Star Wars* | *Titanic* | *Jurassic Park* |
|---|---|---|---|---|---|
| Jane | ? | 5 | 5 | 4 | ? |
| Bob | 2 | ? | ? | ? | 2 |
| Carol | 3 | 5 | 5 | ? | ? |
| Dan | 4 | ? | ? | 4 | 4 |
| Ellen | 4 | 2 | 1 | ? | 4 |

Collaborative filtering systems analyze patterns to infer latent variables that influenced these user ratings. Koren et al. gives two latent factor examples which is how one factors how "serious" a film is while another factors how "male-oriented" it is (2009). These, however, are still somewhat logical categories and latent factors could be something as abstract as "how often the color green appears while a 58.27Hz sound is played" or something equally incoherent to a human.

Using these inferred patterns, the system can estimate missing ratings by predicting how a given user would score a film they have not yet seen using the process described in the content filtering section. This table no longer compares genre ratings or anything clearly definable, so the factors are labeled as $v_1$, $v_2$, and so on up to the last factor, $v_n$. The predicted values are written in red, while explicit ratings are in black.

Table 4. Visualization Matrix, With Latent Factor Calculations

| | *Alien* | *Matrix* | *Star Wars* | *Titanic* | *Jurassic Park* |
|---|---|---|---|---|---|
| $v_1$ | 0.43 | 1.70 | 1.91 | 1.05 | 0.39 |
| $v_2$ | 0.60 | 0.18 | 0.00 | 0.42 | 0.61 |
| $v_{n-1}$ | 1.81 | 0.97 | 0.53 | 1.45 | 1.8 |
| $v_n$ | 0.20 | 0.80 | 0.89 | 0.49 | 0.18 |

| | $v_1$ | $v_2$ | $v_{n-1}$ | $v_n$ |
|---|---|---|---|---|
| Jane | 1.90 | 0.18 | 1.02 | 0.89 |
| Bob | 0.21 | 0.31 | 0.93 | 0.98 |
| Carol | 1.89 | 0.19 | 1.04 | 0.88 |
| Dan | 0.89 | 0.55 | 1.77 | 0.41 |
| Ellen | 0.00 | 0.70 | 1.94 | 0.00 |

| | *Alien* | *Matrix* | *Star Wars* | *Titanic* | *Jurassic Park* |
|---|---|---|---|---|---|
| Jane | 2.95 | 5.00 | 5.00 | 4.00 | 2.85 |
| Bob | 2.00 | 1.38 | 0.98 | 1.74 | 2.00 |
| Carol | 3.00 | 5.00 | 5.00 | 4.00 | 2.89 |
| Dan | 4.00 | 3.65 | 3.00 | 4.00 | 4.00 |
| Ellen | 4.00 | 2.00 | 1.00 | 3.11 | 4.00 |

The values for the latent factors above ($v_1$, $v_2$, $v_{n-1}$, $v_n$) are derived through alternating least squares (ALS), an optimization method described in Koren's U.S. patent *Recommender System Utilizing Collaborative Filtering Combining Both Neighborhood and Latent Factor Models*. ALS starts with random predictions for each of the latent factors but refines these values iteratively by slightly adjusting their values to minimize the error between predicted and actual ratings. As this process is computationally complex and there is minimal data, the example above uses numbers to illustrate the concept rather than calculating the most accurate value. (2011)

This system is applicable to an RS-based themed experience as it can function without each guest explicitly rating their preferences for each aspect of a hypothetical attraction. Although more detailed collection methods are addressed later, these factors can be based on choices guests make such as which Disney MagicBand+ they purchase, which attractions they experience, and how they react to immersive interactions within an attraction. This can allow

systems to recommend which attractions guests are most likely to enjoy as well as tailoring attractions to align with guest expectations. (Disney, 2013)

**Affect Control Theory**

Affect Control Theory (ACT) was inspired by Chales Osgood's research on semantic differentials (culturally shared expectations of identities, behaviors, and environments) where participants marked where concepts like "blue", "polite", and "nurse" align with 150 different pairs of diametrically opposing words (cold vs hot, wet vs dry, good vs bad) and found there was a strong correlation amongst members in a shared culture. For example, "polite" was seen as "smooth", "good", and "relaxed" consistently despite there not having an articulable reason. A data analysis found that just three dimensions (EPA): evaluation (good vs bad), potency (strong vs weak), and activity (active vs passive) allow for an accurate prediction of emotional expectation. (Osgood, 1952)

ACT, developed by Heise, Smith-Lovin, and MacKinnon provides a framework for mathematically modeling human expectations and emotional responses. This theory predicts emotional responses based on the alignment between actors, behaviors, and objects each with its own culturally shared EPA score which is written as {Evaluation, Potency, Activity}. ACT states that emotions can be thought of as signals from actors to objects to signal misalignment or deflection. For example, a nurse {2.9, 1.5, 0.2} comforting {2.8, 2.1, 0.1} a patient {0.9, -0.7, -1.1} has a small deflection of 1.3 compared to a nurse ignoring {-1.9, -0.3, -0.9} the patient which has a deflection of 13.4. To reduce misalignment, the patient may signal that they're upset in an attempt to be treated how they're expected to be. (Kroska et al., 2023)

ACT is relevant to an RS-based attraction as it provides a mathematical model for predicting guest expectations in any given circumstance. The EPA scores for each interactive which functions as the object and how guests are likely to engage with immersive interactives which function as the action can be imported from databases like the USA Kelly Situational Data set which has a wide range of standardized measurements (Kelly, 2023). An RS could then be used to build the EPA values of that particular guest so the outcomes are likely to align with expectations.

**Group Recommendation System**

Physical themed environments often engage more than one guest simultaneously rather than the individual users that were used in the previous examples. In Castro's paper *Opinion Dynamics-Based Group Recommender Systems*, a group recommendation system called GROD is proposed that dynamically factors in group opinions on content. GROD first calculates each guest's individual recommendation as previously described, and then a relationship matrix evaluates how similar or influential each member is relative to others. This relationship iteratively evolves using the DeGroot social influence model which determines if there is group consensus or fragmentation. If a consensus fails, then identifies subgroups until achieving consensus . Rather than simply basing subgroups based on the average score of its members, it calculates it based on *average without misery* which eliminates any option that would make any member less satisfied than the average group score. (Castro et al., 2018)

This could apply in a variety of themed experience contexts. For example, groups that are paired together could be recommended attractions that all members of the group would

enjoy. Unrelated groups of guests that have been randomly paired together such as those who queued together could be divided into subgroups that each received a different experience. This second example is explored further in The Nexus which divides into separate pulses and alters the theme of rooms based on group preferences.

## Utilizing Recommendation Systems in Adaptive Storytelling

Adaptive storytelling applies recommendation system logic to narrative design to allow for branching narratives to be based on more data than the traditional structure would allow. The research in this section does not directly involve themed experiences, but in the following chapter, this will be paired with existing attractions for methods to apply it in that context. In the previous sections, the tools RS use to predict complete pieces of media like films were explored, however the same logic can also guide narrative progression within media.

In *Adaptive Storytelling Based on Personality and Preference Modeling*, De Lima et al. studied how personality modeling can be used to generate individualized interactive narratives using the Big-Five factors: openness, conscientiousness, extraversion, agreeableness, and neuroticism. De Lima et al. describes two methods to integrate Big Five questionnaires into the process: presenting the questionnaire as a traditional Likert scale response or embedding the prompts within the narrative. For example, the traditional prompt may be “I see myself as a person who gets flustered easily” while in the narrative approach, users choose how they would respond to a situation like a friend spilling something on them ranging from doing nothing to scolding the friend, each mapped to the original personality scale.

After taking this personality test, users were invited to read a branching narrative story where all possible outcomes were visible. Their preferred paths were used to calculate the

alignment between Big Five scores and each narrative branch. Once the factors for each narrative branch had accurate factors, the personality tests were given to new users, but each only received the predicted preferred narrative and responded if they enjoyed the story. De Lima et al. reported their method "can adapt interactive narratives according to the users' preferences for narrative events… significantly [improving] the overall experience". This process had a 60% success rate of creating a perfect match between the questionnaire and narrative preference after training with an average of 90.9% accuracy. This demonstrates that personality modeling can improve adaptive storytelling without explicit user control. When applying this research to themed experiences, this suggests that if guest preferences can be accurately measured through collected data, attractions can use RS to enhance guest experiences. (De Lima et al., 2020)

While De Lima et al.'s algorithm focused on predicting which distinct narrative branches a user would prefer, other systems found in video games demonstrate how adaptive systems can further tailor the experience within those larger narrative beats. Valve's *Left 4 Dead* (Booth, 2008), a survival horror video game, pioneered the procedural population system known as The Director, which Thompson describes as "the artificial intelligence of *Left 4 Dead* and *Left 4 Dead 2* that features a dynamic system for game dramatics, pacing, and difficulty" (2022).

Left 4 Dead offers a developer commentary which plays voiceovers from experts in each department. Mike Booth, states that the primary focus of the game was "replayability", so their team developed a custom algorithm that procedurally generates content based on randomness and how the guests are playing. He continues saying that it not only makes the game infinitely replayable as it will be different each time, but it also allows for them to quickly incorporate

changes across the game by only editing a few variables. Gautam Babbar describes the origin of this system as an attempt to guarantee a consistent dramatic experience for the players by tracking their stress level, measured through game events such as damage taken and quantity and position of enemies. If the players perform well, the system increases the intensity by spawning more enemies, changing lighting, or triggering dramatic music. When players struggle, it reduces difficulty by decreasing the zombie population and making special enemies less likely to appear. Chet Faliszek raises the concern that content like dialogue and music would become repetitive, so The Director chooses dialog options that have not recently been played, chooses another character to say the line, or skips the line altogether. He also mentions that many lines were added for unlikely scenarios such as the player choosing to play as Bill, has healed Zoe in the last two minutes, and she is now healing you. Lines like these are meant to give a sense of discovery as the player makes their way through the game. This dynamic balance creates a consistently dramatic experience that feels tailored to each group without explicit narrative branching. This also serves as an example of co-creative design where the user and artist both contribute to the final experience. (UserDDA, 2018)

In an RS-based themed experience, both the methods discussed above could be implemented to control the physical and digital elements. De Lima et al.'s work shows how RS can predict which premade content should be chosen at defined narrative branches while *Left 4 Dead* shows how the narrative can be tailored in real-time to better fit guest preferences.

**Data Collection**

Accurate and efficient data collection is central to improving the performance of recommendation systems. Previous sections examined how RS interpret explicit feedback such

as ratings and surveys; this section reviews research focused on how implicit feedback which Koren includes browsing history, searches, purchases, and even mouse movements as sources of reliable data. (2009)

Qian et al. investigated how accuracy of data on user preferences could be improved through a series of pairwise comparisons, where users repeatedly select between two presented options. Their results achieved an accuracy of 77% using random comparisons which increased to 87% when an adaptive algorithm determined subsequent pairings based on prior selections. However, both processes required an average of 40 comparisons per user to achieve this level of precision with additional comparisons providing diminishing returns (Qian et al., 2015). Wang et al. expanded on this approach studying the impact that the quantity of items being compared has, finding that four options per round produced accurate results with an average of 4.5 rounds per user (2025). Their findings suggest that adaptive choice-based systems can effectively infer preference through behavioral input rather than explicit ratings, offering a scalable method for real-time data collection.

Rafferty et al.'s 1960 paper *Personality Assessment from Free Play Observations* demonstrated that behavioral observations could be used to infer psychological traits proposing that all behavior is motivated, measurable, and predictable within a given context (1960). Gibson et al. developed The Manchester Inventory for Playground Observation which categorizes free-play behaviors into patterns such as confiding, conflict, pro-social, and atypicality to evaluate personality traits and social development (2011). Together these studies show how patterns of interactions and play can reliably model personality and preferences. In Chapter Three: Artistic Analysis, this is applied to interactive play areas such as those found in

Spaceship Earth's Project Tomorrow: Inventing the Wonders of the Future (Disney, 2007b), or Mission: Space's Advanced Training Lab (Disney, 2003).

Real-time interactives are often found in theme park's attractions, queues, and themed lands which provide guests with an activity while they wake, make attractions more engaging, and enhance the overall narrative. These interactions generate implicit feedback such as the movement patterns, how guests chose to interact, their play style, and how they cooperate with other guests.

Khan and Rasool demonstrated how personality traits can be determined through correlating EEG-monitored responses during gameplay with player's extraversion and neuroticism Big Five personality traits. (2022). Expanding this approach, Quwaider et al. used a shooter game and machine learning to predict all Big Five traits across 12,000 participants with 98.6% accuracy (2023). Similarly, Haizel et al. similarly showed that roleplaying games can accurately capture personality traits within a 10% margin of error (2021). Collectively, these studies indicate that interactive media across genres provide accurate insights into user personality and preference while preserving immersion.

## Chapter Summary

The literature review demonstrates that recommendation systems provide a robust framework for predicting content that matches user preferences, enhancing adaptive storytelling. Content and collaborative filtering allow systems to use both explicit feedback such as questions and ratings as well as implicit feedback such as user choice, behaviors, movement, and gameplay. Pairing personality models like the Big Five and affect control theory offer predictive power by aligning narratives and interactions with guest expectations and emotional

responses. Research on data collection shows that immersive experiences and play generate reliable preference and personality data.

Chapter Three is an artistic analysis which pairs these hypothetical research methods with existing themed experiences and interactive media to evaluate which approaches are most likely to provide accurate data while maintaining immersion. Chapter Four applies these findings to The Nexus to demonstrate how RS can personalize narrative, interactivity, and engagement in a themed environment.

# CHAPTER THREE: ARTISTIC ANALYSIS

Building on Chapter Two exploration of recommendation systems (RS) in theory, this chapter analyzes successful experiences that demonstrate methods applicable to RS-based attractions. The first section examines nonlinear narratives including choose-your-own-adventures and real-time experiences to identify engaging storytelling techniques for implementing De Lima et al.'s research on RS-based adaptive storytelling. The second section explores transformative scenic techniques such as projection mapping and show action equipment to show feasible methods of delivering multiple narratives within a single attraction. The final section investigates immersive interactives that illustrate how guests typically interact with experiences and how guest behavior data can be accurately collected without breaking immersion. The insights from this investigation inform how research from the literature review is applied during the development of an original walkthrough attraction, The Nexus presented in Chapter Four.

## Nonlinear Storytelling

### Choose-Your-Own-Adventure

Originally popularized in interactive novels like "The Cave of Time" (Packard & Granger, 1979), CYOA style narrative structures provide a foundation for nonlinear storytelling by allowing audiences to influence events through their choices in both digital media and themed experiences to create the perception of agency and engagement. The image below shows one visualization method for CYOA stories called a narrative tree.

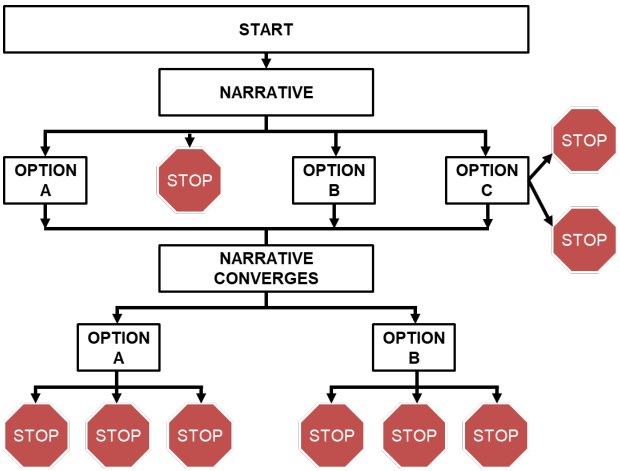

Figure 4. Narrative Tree Diagram. Original Graphic: McGowan, 2025

At the conclusion of EPCOT's Spaceship Earth guests watch a short video depicting a customized vision of their future based on their responses to questions that ask about their interests and preferences. For example, a guest who indicates a preference for city life and remote work is shown what their they can accomplish in their futuristic home office while a guest prefer leisure may see their adventure to outer space (Disney, 1982).

Digital media examples, such as Telltale's *The Walking Dead*, demonstrate how CYOA narratives often allow for greater personalization as their branching decision trees are more impactful. *The Walking Dead* begins by saying "This game series adapts to the choices you make. The story is tailored by how you play" and explicitly lets players know a particular character will remember their choice or dialog response throughout the experience. This creates a sense of tension throughout the narrative so minor decisions like who to share a snack with can feel as consequential as which character's life to save. Each player will create their own narrative they can take ownership of. At the end of each episode, it shows the percentage of players that made the same choice which increases the perception of player agency by making them aware of how different the narrative can be. (Ainsworth et al., 2012)

CYOA style narratives provide a practical framework for emphasizing guest agency and creating opportunities for repeated engagement. Although Spaceship Earth's interactivity is limited, it illustrates the potential for personalizing narrative content based on guest input in a large-scale attraction. *The Walking Dead* provides examples of how CYOA systems can be more engaging by explicitly letting guests know their decision impacted what will happen next and how these decisions compare to other players. If these systems were integrated into a themed experience it would allow for greater self-directed exploration, give guests ownership over their narrative, and encourage them to come back to see how their experience changes with different choices.

**Real-Time Variations**

Real-time personalization refers to narratives that dynamically adapt rather than relying on predetermined branching structures using performer improvisation and gameplay.

Monsters, Inc. Laugh Floor (Disney, 2007a) and Turtle Talk with Crush (Disney, 2004) also use technology to enhance meet-and-greet experiences by using characters rendered in real time and voiced by an unseen performer who interacts directly with the audience. This system combines live improvisation with digital puppetry so the monsters or Crush can naturally respond to guests' questions and comments without breaking immersion. While these attractions are focused on enhancing the meet-and-greet experience, performer driven variations can be incorporated into a larger experience like in Jurassic World: The Experience.

Jurassic World: The Experience at Battersea Power Station (Neon, 2025) is a project that I creatively directed and was chosen to demonstrate how rethinking existing show structures

around personalization can increase engagement. In the previous iteration of the show, Jurassic World: The Exhibition created highly detailed animatronics which wowed audiences but did not focus on narrative or guest engagement which can best be demonstrated through the revamp of the raptor encounter scene present in both. Jurassic World: The Exhibition's raptor encounter used prerecorded voiceovers where a raptor trainer would take a raptor, Blue through a training exercise where she follows simple instructions like taking a step to the left and right and catching a rat before returning to her paddock (Stephen & Taylor, 2021). This version of the show offered no guest participation or opportunity for variation. Jurassic World: The Experience, introduced in 2025, transformed the scene into a responsive, guest-driven moment. The layout was reconfigured to allow more movement within the paddock, introduced a window through the fence so guests can approach Blue, and created a dedicated meet-and-greet area. Using hand signals and coded dialog, the raptor trainer could prompt Blue's reactions to be curious, aggressive, or playful. Additionally, scenic elements like lighting, sound, music, and special effects could be triggered based on guest actions to create a variety of scenarios such as the meet-and-greet experience going as planned or triggering a power failure which unleashes chaos forcing guests to have to flee to safety. The result was a repeatable yet variable experience that adapted naturally to guest dynamics. (2025)

Figure 5. Jurassic World: The Experience, Raptor Encounter. Bright Mode (left) and Dark Mode (right). Photos: McGowan, 2025

Adaptive systems like *Left 4 Dead*'s previously discussed algorithm, The Director, have been used in a variety of games to dynamically tailor pacing, difficulty, narrative elements, and audio cues. Similar systems are applied to interactive rides such as Toy Story Mania! (Disney, 2008), Millennium Falcon: Smugglers Run (Disney, 2019a), and WEB SLINGERS: A Spider-Man Adventure (Disney, 2021a). Walibi Belgium's Challenge of Tutankhamon shows how guests can drive a branching narrative on a ride as their gameplay scores determine which path their vehicles take. Players below the threshold are diverted to the unload while those who exceed it have a final encounter with the Egyptian god, Seth. The battle with Seth introduces a second branching point as those who defeat Seth are taken to an additional treasure room scene before moving to unload. The trackless ride system enables this branching structure as it allows each ride vehicle to move independently. (Walibi, 2003)

**Nonlinear Storytelling Conclusions**

Future large-scale themed experiences like The Nexus can benefit from the nonlinear storytelling frameworks that have been described above. Choose-Your-Own-Adventure style narratives such as those in Spaceship Earth or *The Walking Dead* demonstrate the value of

explicit decision points while real-time systems like those in *Left 4 Dead* and Challenge of Tutankhamon allow for dynamic personalization between decision points. The Nexus demonstrates how this can be incorporated into future large-scale attractions using narrative branches when choosing high-level thematic changes and real-time systems to make fine-tuned adjustments within those themes to aspects like lighting, audio, and special effects.

## Transformative Sets

In this thesis, transformative sets are defined as spaces that use physical and digital technologies to significantly reconfigure or adapt the experience. While many of the chosen examples visibly transform environments as part of the narrative, this section emphasizes how these methods can support multiple narratives within a single attraction. Star Wars: Rise of the Resistance (Disney, 2019c), Star Tours – The Adventures Continue (Disney, 2011), and Symbolica: Palace of Fantasy (Efteling, 2017) illustrate how duplicate or branching spaces can deliver distinct experiences to different groups. Projection mapping in Mickey and Minnie's Runaway Railway (Disney, 2020) and Goofy's Paint 'n' Play House (Disney, 2012a) show how environmental states can be re-themed quickly. Finally, the use of show action equipment to alter large sections of the physical set is shown through Guardians of the Galaxy: Cosmic Rewind (Disney, 2022) and Enchanted Tales with Belle (Disney, 2012c).

### Multiple Guest Paths

Duplicate and branching pathways are the most straightforward method for telling multiple narratives within a given space but clearly result in more resources and operational costs. However, this method has precedent in large-scale attractions to maintain operational

capacity such as Soarin' Around the World's three theaters (Disney, 2005), Haunted Mansion's two stretching rooms (Disney, 1969), Mickey and Minnie's Runaway Railway's four waterfall drop alcoves, Remy's Ratatouille Adventure's four crawlspaces (Disney, 2021b), and various Star Wars: Rise of the Resistance scenes including the interrogation room, loading bay, elevator, and escape pod.

Symbolica: Palace of Fantasy uses three pathways each with their own unique theme (music, treasure, or heroism) that have different rooms, visual motifs, and music while remaining aligned to the overarching storyline. As Symbolica: Palace of Fantasy allows guests to choose their preferred path, guests are encouraged to come back to see the full experience. Symbolica: Palace of Fantasy's success suggests that future RS-based themed experiences could vary the theming of their multiple paths to enhance guest experience across multiple narratives. (Efteling, 2017)

Star Tours – The Adventures Continue also offers varied experiences along different paths but also uses randomly selected media sequences which each take guests to different iconic Star Wars locations. To ensure a coherent story, guests will always have a departure animation, iconic location, receive a transmission, go to a second location, and then end with a finale. Despite guests going on different adventures, all theaters share the same exterior preshow set, ride vehicle set, and overarching narrative premise: passengers on a flight accidentally caught in a larger galactic conflict. This creates variety but uses the same cabin design as each must accommodate every combination. (Disney, 2011)

If each Star Tours – The Adventures Continue theater were instead dedicated to a specific narrative era (prequel, original, or sequel trilogy) each could feature queue spaces, ship

interiors, and visual design that relate to that storyline. Prequel era narratives may use the polished Republic aesthetic for its queue and ride vehicle interior while original trilogy narratives use either the Imperial design style checkpoints or industrial rebel designs with analog control panels while maintaining the same ride system. This method would likely enhance guest immersion without impacting operational performance. As discussed in the nonlinear storytelling section, this could be further enhanced by replacing the random nature of Star Tours – The Adventures Continue with a system that factors in guest behavior. A similar system is explored further in The Nexus.

**Transformational Scenic**

Duplicated or branching paths allow designers to intentionally craft each component of the set to enhance the narrative, but creating additional sets is often too costly to fabricate and upkeep. Transformational scenic elements like projection mapping and show action equipment make it possible to reconfigure environments to support multiple narratives which is critical to the realization of a fully RS-based attraction. This section examines the methods successful themed experiences use to manipulate scenic elements which will be extrapolated in the design of RS powered attractions like The Nexus. Mickey and Minnie's Runaway Railway and Harry Potter and the Battle at the Ministry (Universal, 2025) are used to show how projection mapping, screens, and show action equipment can be used to transform sets as part of the narrative or between guest pulses.

Guests on Mickey and Minnie's Runaway Railway "climb aboard a runaway railway and embark on a whirlwind ride through a world where the rules of physics don't apply" (Disney,

2020). Its use of physical and digital transformations was a primary inspiration for the topic of this thesis and exemplifies how designers can achieve multiple immersive environments within a single space. In one scene guests enter a tropical rainforest, but an erupting volcano knocks them into a river which is shown through individual alcoves for each ride vehicle. As they turn away from the larger room, the media transitions from a rainforest to underwater scene. This transformation is accomplished primarily through projection mapping and shows how environments can quickly change between themes when out of view of guests. (Disney, 2020)

Figure 6. Mickey and Minnie's Runaway Railway, Rainforest to Underwater Scene Transformation. Photos: McGowan, 2022

At the climax of the adventure, Mickey and Minnie flip the switch in a factory transforming the entire factory before the guests' eyes into Runnamuck Park. This transformation combines projection mapping with show action equipment to transform the machines into trees and a carousel. The images below show rods pulling fabric taut into a rectangular shape with machines projections rotating to create triangular shapes with tree projections showing how physical mechanisms can be combined with digital media to enhance transformations. (Disney, 2020)

Figure 7. Mickey and Minnie's Runaway Railway, Factory to Park. Photos, Guests Blurred for Privacy: McGowan, 2022

Harry Potter and the Battle at the Ministry adds additional methods which can be used to transform environments by integrating large-scale LED screens and ride systems. The attraction's most striking example is the climactic battle sequence where guests confront Death Eaters in the Ministry's Department of Mysteries. This scene uses massive LED screens synchronized to the movement of the ride vehicle, animated figures, show action equipment, and other special effects to seamlessly extend the space. Another method designers could utilize is how media is physically integrated into the set. For example, characters often appear in Ministry lifts while speaking to guests, which sometimes are physically constructed rather than being purely digital. (Universal, 2025)

In Tokyo Disneyland, Goofy's Paint 'n' Play House (Disney, 2012a) demonstrates how projection mapping can be paired with interactive elements to give ownership over the transformation. Here, guests use "Splat Master paint applicators" to help Goofy redecorate his room. The play area is filled with simple physical shapes like cubes, spheres, and columns which dynamically change when blasted by the guest with "paint" to fit a variety of visual motifs, including a Hawaiian theme, wild west, and European castle. For example, the cylinder in the corner can be a totem, house plant, cactus, or suit of armor and the sphere can become a beach ball, fishbowl, or crystal ball. (Disney, 2012a)

**Transformative Sets Takeaway**

Transformative sets demonstrate that themed environments can support multiple narratives without requiring extensive physical duplication. While attractions like Symbolica: Palace of Fantasy illustrate the potential of branching paths, resource constraints often make this impractical. Projection mapping, show action equipment, and large-scale LED screens—as seen in Mickey and Minnie's Runaway Railway and Harry Potter and the Battle at the Ministry—allow designers to dynamically reconfigure spaces, enabling varied experiences within the same footprint. Smaller-scale interactivity, exemplified by Goofy's Paint 'n' Play House, shows how guests can actively shape the environment, enhancing engagement and personalization. Collectively, these strategies provide a scalable approach to crafting adaptive, nonlinear experiences and inform how recommendation systems can be integrated to tailor narratives to individual guest behavior, as explored in The Nexus.

The attractions discussed in this section illustrate that themed environments can be transformed through both physical and digital means to enable multiple narratives feasibly. Symbolica: Palace of Fantasy gives evidence to how designers could utilize the duplicated spaces found in attractions like Star Wars: Rise of the Resistance and Star Tours – The Adventures Continue can facilitate multiple narratives. As it is often not feasible to construct multiple paths, physical and digital environmental transformations like projection mapping, show action equipment, and LED screens as seen in Mickey and Minnie's Runaway Railway and Harry Potter and the Battle at the Ministry can supplement environments. Goofy's Paint 'n' Play House shows how small scale attractions can incorporate interactivity and digital transformations. In the following chapter, these methods will be paired with research on RS and nonlinear storytelling demonstrated by The Nexus.

**Data Collection Via Immersive Interactions**

The literature review explained how recommendation systems function and the types of data required to accurately predict user preferences followed by effective methods for measuring personality and preferences. This section analyzes how those theoretical examples can be enhanced using existing themed experience interactives to identify practical creative solutions which are explored in the following chapter. This section begins with methods for linking individual guests with their associated data. Real-time interactives like Millennium Falcon: Smugglers Run demonstrate how behavioral data can be captured during gameplay. The choices guests make such design decisions in interactives like Test Track's Chevrolet Design Center (WDWMagic, 2012) or Savi's Workshop – Handbuilt Lightsabers (Disney, 2019b) will be

examined. Finally, interactives like those found on Spaceship Earth where guests answer questions without breaking immersion are evaluated.

**Assigning Data**

Recommendation systems must have a method of linking individuals to their previous behavior to accurately predict future user preferences . Luckily, theme parks and retailers have developed low-friction identification systems that are familiar to visitors, most notably Disney's MagicBand+. Guests can use their MagicBand+ to enter theme parks, unlock their hotel room, check in at Lightning Lanes, and make purchases throughout the Disney Resort using RFID technology read by both short and longe range readers. In addition to identification, MagicBand+ can vibrate, display a range of colors and patterns, and recognize gestures from the wearer which provide additional data points and interactive feedback.

Other real-world examples illustrate the variety of mechanisms available for linking interactions to identity. Biometric readers like the fingerprint scanners at Disney park entrances or Amazon One which scans customer's palms for payments offer are quick and do not need to pair with other devices (Amazon, 2020). Traditional ticket scanning, barcodes, RFID-enable tickets, and QR codes remain a widely used and reliable method to identify guests. Universal Parks photographs visitors upon entering to connect individuals to their ticket.

These examples demonstrate that a wide range of methods are already implemented at scale to connect individuals to their data and track engagement over time. While multiple methods can be chosen for an RS-based themed experience, it is recommended to select a solution that most closely aligns with the operational and thematic needs of the attraction.

**Guest Choice**

This section examines how existing interactives suggesting that thoughtfully designed in-world choices can function as effective data collection points without breaking immersion. As highlighted in the literature review, Koren et al. states that while high-quality explicit feedback such as ratings, questionnaires, and surveys are valuable methods for collecting data (2009). Similarly, studies by Qian et al. (2015) and Wang et al. (2025) demonstrate that pairwise and multiple-choice selections significantly improve prediction accuracy. This can be done within the attraction itself as will be discussed, or before the attraction begins such as recording the color, design, and character guests choose when selecting their MagicBand+. For example, a guest who selects a Darth Vader themed band may have different preferences from a guest who chooses Luke Skywalker, who are each different from a guest who chooses Mickey Mouse.

Savi's Workshop - Handbuilt Lightsabers at Star Wars: Galaxy's Edge shows how guest choices can feel more impactful to the guest experience. Here, guests construct a personalized lightsaber under the direction of the Gatherers by selecting hilt components, blade color, and themes. Each theme: Peace and Justice, Power and Control, Elemental Nature, and Protection and Defense embodies a different aspect of the force which elevates the choice beyond the aesthetic into something that's almost spiritual. While MagicBand+ offers numerous themes, an interactive that allows guests to construct their own object allows for additional data collection while bringing guests into the world. (Disney, 2019b)

Chevrolet Design Center was an interactive in Test Track's queue from 2012-2024 where visitors customized their SIM Car including aesthetic choices like its color, decals, and style as

well as mechanical choice such as the engine, wheels, and frame which is periodically scored throughout the attraction (WDWMagic, 2025). While this interactive had little impact on the ride experience as it just changed a number on screens scattered through the attraction, an RS-based attraction could adjust multiple aspects to align more closely with the guest's choices.

Like choosing between films and shows, data could be collected on which attractions guests visit and in which order to use as initial data points as guests who ride on slow moving rides likely have different preferences than those who choose thrill rides. Similarly, one could track how guests interact with play areas such as Project Tomorrow: Inventing the Wonders of the Future (Disney, 2007b), Advanced Training Lab (Disney, 2003), and the indoor children's playground in the Dumbo the Flying Elephant queue (Disney, 2012b). For example, in Project Tomorrow: Inventing the Wonders of the Future, a guest who manages energy at Power City before performing a simulated surgery may have different preferences than one who drives the car simulator after playing with the globe centerpiece.

Explicit feedback can also come in the form of multiple choice questions without breaking immersion. In the nonlinear storytelling section, Spaceship Earth's Welcome to Your Future interactive was used as an example of CYOA style narratives. Here, guest responses to questions such as "What are you most interested in? Home, Work, Health, Leisure" and "Which sounds like more fun? Under sea, Outer space" (4K WDW, 2024) directly control the media that is shown afterwards, i.e. they are shown what they would do for leisure under the sea. However, this style of interactive a hypothetical RS-based attraction can instead be used as additional latent factors that impact the experience in more subtle ways. For example, if this interactive was brought to the start of the ride, guests who respond that outer space sounds like

more fun may have a voiceover that discusses technology's impact on humanity while a guest who is interested most in the home may have a voiceover that describes our story through sociology.

Holo-Ted at the Theodore Roosevelt Inaugural National Historic Site further exemplifies this approach, allowing guests to converse with a holographic character using a combination of pre-recorded material and real-time responses generated by a large language model (McKinley, 2025). Atmaja and Sasou's study of sentimental analysis and emotional recognition from speech shows how a user's emotional state can be predicted to a high degree, 85%, through the sound of their voice (2022). This is similar to the results of Tripathi et al. whose study reports an accuracy rate of 75% through the use of convolutional neural networks (2019). This shows that sentiment analysis of a guest's verbal answer to a question is a viable method of collecting personality data.

Using data collected from both implicit signals determined by guest choices and explicit inputs from questioning attractions can generate a robust dataset for an RS-based themed experience to predict guest preferences.

**Real-Time Interactives**

Real-time interactives are those that can capture behavioral data continuously as guests participate in an experience. As discussed in Haizel et al.'s (2021) and Quwaider et al.'s (2023) research, these interactives collect implicit feedback such as reaction time, accuracy, and cooperation can be used to score users' Big Five score to a high degree of accuracy. This suggests that real-time interactions in themed attractions can serve as valuable indicators of

engagement style, and this section will examine how this can be done without disrupting immersion.

On Millennium Falcon: Smugglers Run guests are assigned one of three unique roles: pilots control how the Falcon moves, gunners fire weapons, and engineers make repairs to the ship. Each guest's performance impacts the adventure throughout the experience and impacts the amount of credits that are earned. While role is currently assigned randomly, allowing guests to select or switch roles could introduce an additional explicit choice that informs the system about preferred interaction styles. An RS-based attraction could dynamically change narratives, difficulty, dialogue, and other effects based on guests' actions inside and out of the attraction. For example, if a guest went on Star Wars: Rise of the Resistance before Millenium Falcon: Smugglers Run, it could reference that adventure, or if a guest interacts with the First Order then Chewbacca may be replaced with another character. (Disney, 2019a)

Shooting interactives are one of the more common methods for guests to engage with an environment in real-time. In attractions like Toy Story Mania! (Disney, 2008), Buzz Lightyear's Space Ranger Spin (Disney, 1998), and MEN IN BLACK Alien Attack (Universal, 2000), guests aim and fire at moving targets to earn points. Data can be collected based on accuracy, reaction time, firing rate, and which types of enemies are targeted by the guest. The same underlying logic extends beyond projectile mechanics to other gestural systems, such as the interactive wand experiences found across The Wizarding World of Harry Potter lands (Universal, 2014) or the shadow play in the queue of Peter Pan's Flight (Disney, 2014) which responds to a guest's movements.

**Data Collection Takeaway**

The examples discussed demonstrate how the theoretical data collection methods discussed in the literature review can be made more immersive using existing themed experiences as a basis. This data can be linked to the appropriate guest through mechanisms like MagicBand+ or themed RFID devices. These RFID devices can be used to both identify, but also as another data point based on the theme that is chosen if paired with interactives like Savi's Workshop – Handbuilt Lightsabers or Test Track's Chevrolet Design Center. Real-time interactives such as Millennium Falcon: Smugglers Run and Toy Story Mania! capture implicit feedback such as accuracy, fire rate, and what is targeted. As Koren et al.'s research states, matrix factorization can reveal how guest behavior correlates to interests and preferences.

For RS-based attractions like The Nexus, real-time interactives can serve as a source of continuous data collection based on guest behavior which can impact the environment, dialogue, narrative, and effects. It is likely that real-time interactives would aid in the refinement of broader personalization interactives that pull from explicit feedback.

## Chapter Summary

The literature review introduced the theoretical concepts behind recommendation systems, but this chapter focused on existing themed experiences to find methods to make immersive narratives which could best utilize it. Nonlinear storytelling frameworks showed how De Lima et al.'s research could dictate larger branching narratives while real-time variations *Left 4 Dead* show how narratives can be tailored to accommodate specific audiences. Mickey and Minnie's Runaway Railway and Harry Potter and the Battle at the Ministry show how sets can

transform physically and digitally to accommodate multiple narratives. Explicit feedback like the questions in Spaceship Earth and implicit feedback from interactives like Millenium Falcon: Smugglers Run were shown to be data collection methods that enhance immersion while preserving accuracy. The next chapter applies the academic research to the artistic experiences analyzed in this experience to show how an RS-based themed experience could be constructed.

# CHAPTER FOUR: APPLICATIONS IN THEMED EXPERIENCES

This chapter applies the findings from the literature review and artistic analysis to The Nexus, an original immersive walkthrough attraction demonstrating how recommendation systems (RS) enhance guests experience by personalizing narratives, interactives, and environments. Original elements such as a narrative overview, immersive interactive descriptions, and visualizations of transformative scenic showcase methods of implementing these techniques in future large-scale attractions. Additional creative materials such as complete narrative walkthrough, floor plans, visualizations, and scope documents are included in the appendix.

Factors such as guest throughput, operational efficiency, and profitability are not the focus of this design. While financial viability is essential to creating a successful themed attraction, The Nexus is meant to be an academic exploration of a wide range of techniques. Future RS-based themed experience designers could implement only the elements that enhance guest experience to maintain economic feasibility.

## Narrative

### Longline

In this walkthrough attraction, a magical portal transports guests from a mundane warehouse to The Nexus, a multiverse that evolves to reflect the desires of each visitor.

### Overview

The Global Freight & Shipping Nexus was remarkably unremarkable, just another one of the identical concrete boxes in an endless grid painted an inoffensive yellow. Inside, employees

mindlessly moved through the aisles, labels, organizing, and inspecting the mundane office supplies. This all changed the day a massive crate was found against the wall with no labels, markings, or anything to suggest where it came from. Standard procedure was to let the management check things out, but there was something calling out from within. When they pried it open a surge of shimmering energy spilled out, the light forming delicate filigree patterns. Everything it touched transformed: industrial shelves twisted into organic sculptures, fluorescent lights became stained glass, and the packages became works of art.

The portal revealed itself as a bridge between worlds, The Nexus where reality bends to reflect the desires of anyone who entered. Word spread and visitors soon followed, curious to see if the rumors were true. As time passed, the building continued to change, the façade's paint peeled to reveal patinaed copper, wrought iron snaked up the wall in whiplash curves, and the "Global Freight & Shipping" section of the sign collapsed leaving only "The Nexus."

After checking in, guests weave through the aisles of the warehouse, admiring how the building is in the process of transforming. They are greeted by a worker who explains the history of The Nexus and how it transforms based on what people do. Traditionally, these changes happen gradually, taking time and focus to occur, but they imagined totems that focus this creative energy and The Nexus responded by manifesting six types of pendants. If a guest taps this pendant to a corresponding symbol found throughout The Nexus, they can see more immediate results. Each guest then helps create their own personal guide to help them navigate this dimension.

The worker gathers guests and leads them to the room where this all began. The rolling shutter doors have been incorporated into the portal becoming a gate inspired by Castel

Béranger (Guimard, 1895). Between the filigree tendrils, the room remains ordinary, but everywhere it touches is extraordinary. The portal glows as its energy radiates outwards, transforming the walls into stained glass which each shows a glimpse of another reality. As they step through the portal, entering another world.

From here, guests explore a sequence of interconnected environments, each changing based on what guests have previously done. The Inventor's Fair, an atrium of kinetic sculptures, living machines, and other interactives that blend engineering and art. Guests enter the Alien Forest in smaller groups depending on their preferences, each experiencing the forest at a unique time of day: golden hour emphasizes natural beauty, twilight offers adventure as guests fend off potential predators, and night glows with bioluminescent creatures (dynamic media, audio, lighting, and interactives). The Heart of the Nexus transforms before guests' eyes to match the theme of each group's finale scene (projection mapping and show action equipment). Each finale explores a different facet of human creativity and imagination such as the harmony between technology and nature, the chaos of creation, or the birth of stars (motion ride with projected media). When the guests return, the warehouse has continued to change its form with items that call back to their adventure. Guests can explore the warehouse for a memory to take home with them (retail).

**Branching Narrative**

While each room offers interactives that impact the environment, there are branching points that result in significant narrative changes based on the behaviors of guests. The image below visualizes possible narrative branches. Each environment occupies its own row with

circles representing the high-level narrative beats and lines indicating paths between them. Each narrative branch is chosen using a separate RS which predicts the preferred branch using choices up to that point.

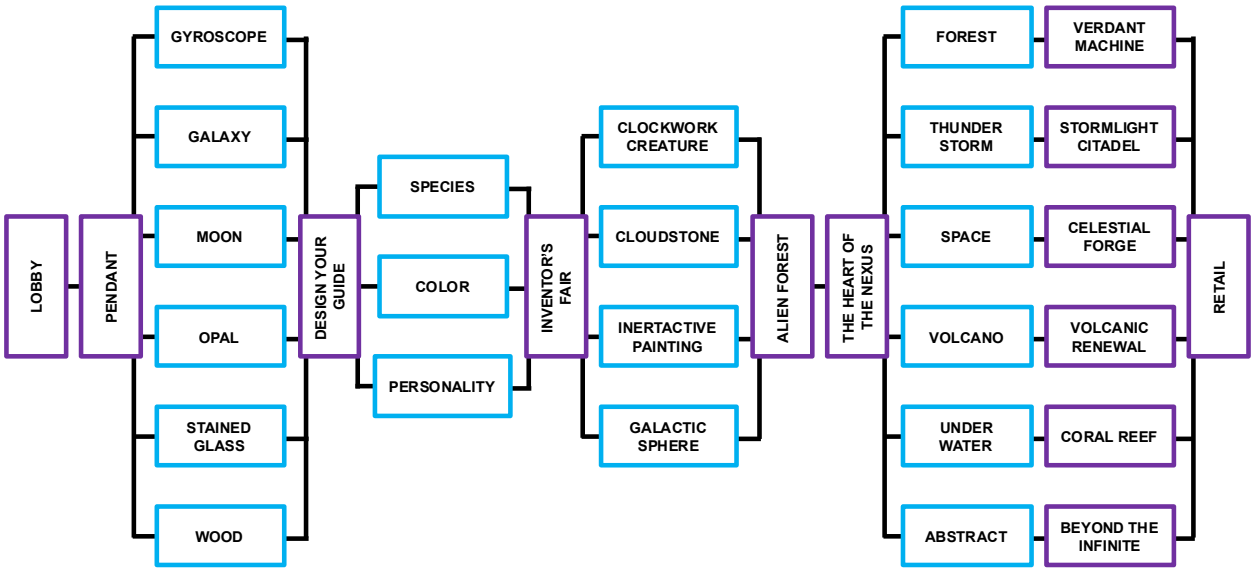


Figure 8. The Nexus, Branching Narrative Diagram. Original Graphic: McGowan, 2025

The branching structure is largely linear with major branches occurring before the Alien Forest and finale. Latent factors gathered from guest choices and behaviors up to that point such as their choice of medallion, guide design, and interactives determine which narrative branch each guest will experience.

### Immersive Interactives

This section describes several of the interactives found throughout The Nexus and how data collected from them can function as latent factors in the recommendation system to drive high-level branching narrative choices and real-time effects. The first discussed is Design Your Guide where guests select aspects of their digital guide which accompanies them through the

attraction. This is followed by interactives from the Alien Forest which shows how real-time behaviors can be measured to adjust narrative and environment continually.

**Design Your Guide**

After collecting their medallions, guests design their guide for the rest of their adventure. This is inspired by character creation systems common in role-playing video games as well as Test Track's Chevrolet Design Studio. This simultaneously acts as an immersive interactive, enables personal expression, and generates meaningful data for the RS.

Using Wang et al.'s research as a basis, most decision guests make are between four options. First, they select their type of guide: human, animal, mechanical construct, or magical creature. From here, each major type has four additional options. For example, guests who choose animals then select if they want a mammal, bird, reptile, or bug. If bug is chosen, they can select if it is a butterfly, wasp, dragonfly, or spider. Guests continue by choosing colors, equipment, height, and weight as well as personality traits such curious, serious, energetic, and helpful. A timer shows the guest that they have limited time for this interactive which aids operations while encouraging guests to prioritize certain traits over others.

The choices made in this interactive impact the appearance and behaviors of their guide each time a guest taps their medallion on an interactive touchpoint but also are recorded as latent factors that are used by the RS to predict narrative branch preferences. Guides will continue to learn as guests make their way through the experience. For example, if the guest ignores the guide, it will appear less frequently. Additionally, guides can also suggest multiple

engagement options to guests to gather additional information if the system cannot confidently predict preferences.

**Blooming Flowers Interactive**

The Blooming Flowers interactive was chosen to showcase how implicit feedback such as real-time guest movement data can be collected in large-scale attractions while being operationally feasible, engaging, and immersive. Motion detection software can be paired with the guests' RFID medallion to assign data using a long-range reader like those found in Disney MagicBand+. Additionally, MagicBand+ also collects acceleration data, which is used for their gesture detection, but in this interactive it can be also be used to collect more accurate data on their walking speed and how erratic they are moving. This behavioral data can be used to infer personality traits and preferences in a process similar to those researched by Gibson et al.'s play research and Quwaider et al.'s real-time gaming research discussed in the literature review.

Positioned in the Alien Forest scene, this interactive is themed to physical flowers that bloom with a pleasant chime as the guest passes by. Each flower is an electromechanical prop inspired by Deeplocal's exhibit in Google's 9$^{th}$ Avenue lobby in New York, NY which are capable of "real-time sensing and machine learning" and analyzing guests' movement for "cued choreography" such as a person running, waving, or dancing (2023). This system can be further enhanced to synchronize with the environment through an integrated show control system like Q-SYS which can include directional speakers within the flowers like those created by Focusonics' to reduce audio bleed (2019), addressable LEDs to change the colors and patterns of the flowers, and scent effects.

Pulling from the research of De Lima et al. who studied how narrative branching can be guided by RS and real-time game engine directors like those used in Left 4 Dead, the actions of the guest can impact how the remainder of the scene plays out. A guest who pauses near the blooming flowers signals that they likely prefer a more calming experience. The pleasant chimes of the blooming flowers transition into a meditative sound bath as seen in Nagashima and Nakazato's Sound Forest which play soothing ambient forest sounds (Lépine, 2011). As the guest continues to soak in the natural beauty of, bioluminescent wood sprites begin to float down from above (digital media) and land on foliage which glows in response (blacklight). Guests who continue to be passive walk through a calming forest which they can connect to on a spiritual level. However, guests who decide to reach out for the wood sprites may find a beautiful, yet playful game as the sprites navigate around the guest.

Conversely, a guest who runs back and forth to see the flowers quickly bloom and close may be entertained by the twinkling noises similar to a mark tree-style scale of chimes. The sound of the guest playing attracts the attention of forest creatures (digital media). Guests who innocently run with the small creatures may find they can play hide-and-seek, but those who are aggressive can scare the creatures away as measured with motion detection and their RFID accelerometer. Guests who scare the small creatures are confronted by the adult version of those same creatures further down the path which in its pursuit accidentally traps itself in vines which allows guests another interactive opportunity on if they choose to release it or not.

Through the variety of responses, this interactive demonstrates how environmental storytelling enhances data collection methods. While narratively complex, each component of the interactive relies on easily measured reactions. The real-time changes within the Alien

Forest scene is paired with an overarching RS that carries the decisions here through to help predict which finale sequence the guest encounters.

### Using Recommendation Systems to Predict Preferred Finale

This section demonstrates how the research in the mechanics of RS discussed in the literature review can be applied to the themed experiences from the artistic analysis within The Nexus to create a personalized finale sequence. Guest behavior throughout the experience generates numerous measurable factors including the pendant choice, the attributes of their guide, inventor's fair activities, the blooming flowers interactive as well as factors outside the attraction such as arrival time and demographics.

As previously discussed, these factors form a unique personality vector for each guest. As there is no current data, a collaborative filtering system that compares this vector to the latent factor profiles of each guest is not possible, so this thesis focuses on a content filtering system. This system instead uses each interactive as a source to create a user profile which is compared to the values assigned to each finale with the prediction that the strongest alignment is most likely to result in a positive guest experience. The following example shows how this system would function.

Guest profiles and finales are comprised of seven factors: evaluation (how good or bad), potency (how powerful), and activity (how active), adventurous (willingness to take risks), tension (uncertainty), fantasy (how realistic), and motion (correlation to intense ride vehicle motion). The value of evaluation, potency, and activity given by the USA Kelly Situational Data set as discussed in the literature review (Kelly, 2023). The values for motion, adventure, tension,

and fantasy represent an initial estimate which would be updated. The table below shows a subset of the full data table which is attached in the appendix.

Table 5. The Nexus Latent Factor Interactive, Overview

| Interactive | Choice | Eval | Pot | Act | Mot | Adv | Tens | Fant |
|---|---|---|---|---|---|---|---|---|
| **Pendant** | Gyroscope | 0.56 | 0.75 | 0.68 | 0.15 | 0.45 | 0.10 | 0.60 |
| **Pendant** | Galaxy | 0.51 | 1.00 | 0.72 | 0.10 | 0.35 | 0.05 | 0.85 |
| **Pendant** | Moon | 0.47 | 0.83 | 0.44 | 0.10 | 0.30 | 0.05 | 0.80 |
| **Pendant** | Opal | 0.69 | 0.59 | 0.42 | 0.05 | 0.25 | 0.05 | 0.70 |
| **Pendant** | Stained Glass | 0.63 | 0.32 | 0.63 | 0.10 | 0.35 | 0.05 | 0.75 |
| **Pendant** | Wood | 0.75 | 0.48 | 0.57 | 0.05 | 0.20 | 0.05 | 0.50 |
| **DYG Color** | Black | 0.61 | 0.53 | 0.59 | 0.50 | 0.50 | 0.50 | 0.50 |
| **DYG Color** | Orange | 0.38 | 0.27 | 0.41 | 0.50 | 0.50 | 0.50 | 0.50 |
| **DYG Color** | Purple | 0.43 | 0.29 | 0.35 | 0.50 | 0.50 | 0.50 | 0.50 |
| **DYG Color** | Red | 0.48 | 0.36 | 0.54 | 0.50 | 0.50 | 0.50 | 0.50 |
| **DYG Pers.** | Curious | 0.84 | 0.67 | 0.65 | 0.25 | 0.70 | 0.15 | 0.70 |
| **DYG Pers.** | Serious | 0.70 | 0.66 | 0.38 | 0.10 | 0.50 | 0.30 | 0.40 |
| **DYG Pers.** | Energetic | 0.87 | 0.81 | 0.93 | 0.60 | 0.85 | 0.40 | 0.60 |
| **DYG Pers.** | Helpful | 0.94 | 0.81 | 0.69 | 0.35 | 0.75 | 0.10 | 0.55 |
| **DYG Type** | Firefly | 0.87 | 0.36 | 0.79 | 0.15 | 0.50 | 0.05 | 0.85 |
| **DYG Type** | Wolf | 0.32 | 0.77 | 0.76 | 0.70 | 0.85 | 0.40 | 0.55 |
| **DYG Type** | Dragon | 0.37 | 0.84 | 0.47 | 0.90 | 1.00 | 0.60 | 0.95 |
| **DYG Type** | Mech, Drone | 0.57 | 0.33 | 0.31 | 0.50 | 0.75 | 0.30 | 0.60 |
| **Bloom Flowers** | Walk Speed – Avg | 0.50 | 0.50 | 0.50 | 0.30 | 0.65 | 0.10 | 0.75 |
| **Bloom Flowers** | Walk Speed – Fast | 0.56 | 0.54 | 0.57 | 0.50 | 0.80 | 0.15 | 0.80 |
| **Bloom Flowers** | Walk Speed – Slow | 0.57 | 0.53 | 0.47 | 0.15 | 0.40 | 0.05 | 0.70 |

Guest profiles are then calculated by taking the sum product of all choices for each factor, multiplied by the interactive's bias which is a factor that determines how much that is factored, averaged, and then this process is repeated for each factor. This would be represented in a table like the one below where $G_n$ is the total number of guests.

Table 6. Guest Profile Example

| | Eval | Pot | Act | Mot | Adv | Tens | Fant |
|---|---|---|---|---|---|---|---|
| $G_1$ | 0.77 | 0.20 | 1.00 | 0.07 | 1.00 | 0.07 | 0.86 |
| $G_2$ | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 |
| $G_{n-1}$ | 0.85 | 0.20 | 0.25 | 0.00 | 0.26 | 0.00 | 1.00 |
| $G_n$ | 1.00 | 0.00 | 0.69 | 0.02 | 0.67 | 0.04 | 0.94 |

Each finale would also have its own profile. In a collaborative filtering RS, these numbers would be iteratively updated as additional data is collected, but in this example the factors are predetermined. The values are based on the opinion of the artist, so they would have to be updated periodically manually until sufficient data is gathered to automate the process. This can be seen on the table below.

Table 7. Ending Profile Example

| | Eval | Pot | Act | Mot | Adv | Tens | Fant |
|---|---|---|---|---|---|---|---|
| Verdant Machine | 1.00 | 0.10 | 0.90 | 0.20 | 1.00 | 0.10 | 0.90 |
| Stormlight Citadel | 0.00 | 0.90 | 0.20 | 1.00 | 0.10 | 0.90 | 0.10 |
| Celestial Forge | 0.50 | 0.30 | 0.80 | 0.40 | 0.90 | 0.30 | 0.80 |
| Volcanic Renewal | 0.20 | 1.00 | 0.40 | 0.80 | 0.50 | 0.80 | 0.30 |
| Coral Reef | 0.80 | 0.20 | 0.10 | 0.30 | 0.20 | 0.20 | 1.00 |
| Beyond the Infinite | 0.30 | 0.70 | 0.60 | 0.90 | 0.80 | 1.00 | 0.60 |

The ending each guest is delivered is predicted using the cosine similarity function described in the literature between that guest's factors and each ending. The values are found in the table below.

Table 8. The Nexus Ending Predictions

| | $G_1$ | $G_2$ | $G_{n-1}$ | $G_n$ |
|---|---|---|---|---|
| Verdant Machine | 0.99 | 0.12 | 0.85 | 0.98 |
| Stormlight Citadel | 0.23 | 0.99 | 0.16 | 0.13 |
| Celestial Forge | 0.96 | 0.35 | 0.76 | 0.88 |
| Volcanic Renewal | 0.53 | 0.89 | 0.39 | 0.41 |
| Coral Reef | 0.74 | 0.30 | 0.96 | 0.86 |
| Beyond the Infinite | 0.68 | 0.78 | 0.51 | 0.58 |

Using the above table, the predicted preferred endings for the guests would be that $G_1$ and $G_n$ are assigned “Verdant Machine”, $G_2$ is assigned “Stormlight Citadel”, and $G_{n-1}$ would likely prefer “Coral Reef.” This prediction is delivered to the guest in The Heart of the Nexus scene when they discuss their upcoming adventure with their guide. Guests who aren’t satisfied with the delivered ending because it does not align with their preferences, they have already experienced that ending, or any other reason may indicate they want to go somewhere else. The guide happily shows them each of the six options for them to select and are listed in order of alignment. Guests are also invited to adjust the ride vehicle movement at this time.

This additional feedback allows the RS to make corrections periodically so that it can make more accurate predictions in the future.

## Dynamic Environments

Dynamic environments are central to applying RS research from the literature review to settings similar to the experiences discussed in the artistic analysis chapter. This section seeks to illustrate how large-scale attractions can be designed to allow for more personalized experiences that are more likely to emotionally resonate with guests. Two scenes, the Alien Forest and The Heart of the Nexus, have been chosen to highlight various techniques that

enable these transformations. The Alien Forest shows how subtle changes in lighting, sound, and media between groups can evoke different emotions that align to their preferences. The Heart of the Nexus showcases how transformations that occur in front of guests can be used as a spectacle while personalizing experiences and giving narrative ownership to each guest.

Each interactive plays a part in which theme is presented to guests entering the Alien Forest. The choice of their medallions, how they design their guides, and how they interact with the Inventor's Fair results in one of three possible themes: golden hour emphasizes the life of the forest, lighting, and activity; the serene night scene glows with bioluminescent light as wood sprites drift down; the deep of night is ominous with aggressive animal sounds triggered by guest movement to heighten tension. This variation of theme can be seen in the images below.

Figure 9. Alien Forest: Golden Hour Overlay (left) Bioluminescent Overlay (right). Unreal Engine Render: McGowan, 2025

Similar to Mickey and Minnie's Runaway Railway, Goofy's Paint 'n' Play House, and Battle at the Ministry, the practical implementation of these dynamic environments relies on the integration of projection mapping, show action equipment, and interactive media. Show control systems can be used to coordinate animatronics, lighting, and media triggers so the theming is

properly modified to match guest preference. The image below shows how the Alien Forest would appear without any of these techniques applied.

Figure 10. Alien Forest: No Overlay. Unreal Engine Render: McGowan, 2025

When arriving at The Heart of the Nexus guests are told they will be traveling to the edge of this dimension to discover how they can change the world. Prior to each group of guests entering the finale, a thematic takeover occurs, transforming many aspects of the space to align with that group's destination. The image below shows how the space looks without theming applied next to a diagram which highlights which aspects are changeable. This includes the back wall projection mapped to serve as a large window into the upcoming environment, the main door guests will be walking through (projection), a large "crystal" which is a hollow shape with internal projection, interactive screens, and spotlights with various gobo effects. Additionally, other special effects such as smells, UX/UI changes, and sound can further theme these areas.

Figure 11. The Heart of the Nexus: Dynamic Aspects. Unreal Engine Render: McGowan, 2025

Below are three examples of how space looks when the different themes are applied. The outer space theming shows colorful nebulae that are waiting to be explored, underwater shows alien coral reefs and other strange structures that have mysteries waiting to be discovered, and the forest themes allow guests to continue their exploration of the alien forest and reunite with the creatures they met just moments before.

Figure 12. The Heart of the Nexus: Various Overlays. Unreal Engine Render: McGowan, 2025

These transformative scenic design methods along with many others create spaces that can dynamically adapt to better suit guest preference. While the above examples apply many of these principles simultaneously, large-scale attractions would likely apply these minimally due to resource restrictions.

## Chapter Summary

This chapter demonstrates how findings from the literature review on recommendation systems can be applied to large-scale themed experience attractions, drawing from real-world successful attractions for guidance. This analysis provides a framework for future designers seeking to implement immersive RS-driven experiences. The Nexus illustrates how latent factors can be gathered by capturing guest behaviors to immersive interactives. These factors allow RS to predict which narrative pathways and dynamic transformations are most likely to appeal to guests. Transformational scenic effects were demonstrated through projection mapping, show action equipment, interactive media, and special effects.

# CHAPTER FIVE: CONCLUSION

This thesis demonstrates how recommendation systems (RS) can be applied to large-scale attractions to more closely align their narratives, environments, and interactives to individual guest preferences. This raised four key questions:

1. How can recommendation systems enhance branching narratives, particularly within themed experiences?
2. How can current interactive design methods be used to collect the data necessary to predict guest preferences without breaking immersion?
3. How can transformative scenic methods like projection mapping and show action equipment be used to accommodate multiple narratives practically?

An analysis of relevant literature established that current RS algorithms are capable of accurately predicting guest preferences and using this data to enhance adaptive storytelling structures. An analysis of relevant themed experiences shows how latent factors can be collected practically without impacting immersion. The analysis also shows the techniques that are most effective at creating these attractions projection mapping, show action equipment, and interactive media show.

The Nexus, a hypothetical attraction detailed in the previous chapter, serves to make the application of these principles more concrete. The complete version of The Nexus, including its narrative walkthrough, floor plans, and visualizations, is included in the appendix to provide a comprehensive view of the creative solutions and technical details.

While The Nexus applies RS extensively, it is recommended that future large-scale attraction designers implement relevant aspects of this research into their experiences. For

example, responsive environments can enhance otherwise linear rides to give guests narrative ownership and a sense of control. Nonlinear attractions like Star Tours – The Adventures Continue could benefit from aligning guest behavior and experiences into a system that gives control over otherwise random events. Attractions that offer personalized aspects like the conclusion of Spaceship Earth could be restructured to move interactive portions to the start of the ride so it can have greater impact over the entire narrative. Attractions with lower budgets can still incorporate components of this research such as lighting and audio control adjustments.

This thesis' primary limitation was the scale of the project being far too large for any individual to solve. Future research should explore collaborations between computer scientists with RS expertise, themed experience designers, and fabricators to further develop the methods proposed. While extensive research was conducted, it is not feasible to anticipate and solve unexpected challenges.

It is recommended that applications beyond themed experiences including education, commerce, and social media should be investigated to determine which methods proposed in this thesis may be applicable to those fields.

# APPENDIX: THE NEXUS

## Background

The Global Freight & Shipping Nexus was remarkably unremarkable, just another one of the identical concrete boxes in an endless grid painted an inoffensive yellow. Inside, employees mindlessly moved through the aisles, labels, organizing, and inspecting the mundane office supplies.

That changed the day a massive crate was found against the far wall with no labels, markings, nothing to suggest where it came from or who received it. Standard procedure was to move it into the corner and let the management check things out, but there was something calling out from within. When they pried it open a surge of shimmering energy spilled out, the light forming delicate filigree patterns. Everything it touched transformed: industrial shelves twisted into organic shapes, fluorescent lights became stained glass, and the packages became works of art.

The portal revealed itself as a bridge between worlds, The Nexus where reality bent to reflect the desires of anyone who visited. Word spread and visitors soon followed, curious to see if the rumors were true. As time passed, the façade of the building continued to change, paint peeled to reveal patinaed copper, wrought iron snaked up the wall in whiplash curves, and the "Global Freight & Shipping" section of the sign collapsed leaving only "The Nexus."

## Attraction Walkthrough

Guests arrive at an industrial park with the expected cracked pavement, faded wayfinding marks, until they turn the corner and are confronted with the unexpectedly ornate façade of The Nexus. Inside, the lobby looks like it could be any banal shipping center with an off the shelf checkout counter, fluorescent lights, and countless cardboard boxes stacked on

industrial shelves, that is, except the areas that have been enveloped by strange energy. Each group is scanned in as though they were one of the expected packages, their information taken so they can be processed correctly (check-in process) and promises something exciting is just down the hall. Rather than typical switchback queues, guests make their way through aisles of industrial shelves with three-ring binders replaced by leather bound tomes, reems of paper now folded into intricate origami flowers, and a dragon figurine (once a stapler) grasps a pile of paper.

At the end of the queue, the shelves open into the shipping and receiving room where the transformational energy seems to have grown stronger. The large shipping container has nearly completed its transformation, the corrugated metal sides replace with dark walnut, brass, and glass (faux materials). The docent greets the guests, thanks them for joining and gives a spiel about the history of The Nexus. They continue explaining that beyond this point their choices will begin to shape the world they see in The Nexus which reflects all of their desires, hopes, creativity, and optimism back to them. While every action leaves an imprint, they have marked particularly responsive areas with a spiral medallion (interactives).

Previously, these changes would happen gradually, taking time and focus to occur, but the docent imagined totems that can focus creative energy. The Nexus responded by manifesting six types of pendants, each corresponding to a different type of person stored in the container behind them. Guests explore let their hearts guide them to which feels right: a clockwork gyroscope of polished brass, a wooden medallion carved with flowing whiplash curves, a scarab with stained glass wings, an opal wrapped in spiraled, a galaxy suspended in glass, and a silver crescent moon (faux materials).

After selecting their pendant, the docent taps their own pendant against a medallion which glows as the wall opens unexpectedly. Guests follow them through into a room filled with clockwork terminals. As they approach, the gears begin turning rhythmically and a screen on the terminal activates (short-range RFID). The docent explains that every traveler in The Nexus needs a guide, and these terminals will help them manifest theirs.

Guests tap their pendants against the spiral medallion set into the console and a pulse of light flows out of the pendant (addressable LED) and into the machine, the theming of the screen transforming to reflect their pendant (RFID). Those who want to be paired together each tap their medallion to the console one at a time which will ensure they are never separated.

The experience begins by having each guest select which world most appeals to them as shown through a series of images: peaceful meadows, glowing caverns, and bustling markets, each choice draws the world closer to their ideal vision. After the final selection, a formless entity begins to coalesce within the display, introducing itself as their guide. It gently explains that together they will manifest a shape that is most appealing. Guests can customize many aspects of their guide such as which species it is (human, animal, mythical creature, machine), the tone of its voice, its personality (helpful or quiet, playful or serious, curious or wise), color, attire, and actions. Finally, the guide introduces themselves and asks if there's anything that they might want to change. Once the guest is satisfied, the guide smiles, dissolves into light, and flows back into the pendant. Their pendant vibrates, chimes softly, and glows with the color of the guide's spirit alive within.

The docent gathers guests and leads them to the room where this all began, opening the door to what was a perfectly ordinary room. The rolling shutter doors have been incorporated

into the portal becoming a gate inspired by Castel Béranger. The impact of the flowing energy is apparent, the filigree marks spread beautifully across the room, between its tendrils remain ordinary, but everywhere it touches is extraordinarily.

The docent closes the door behind the last guest. Energy surges through the portal's grooves like liquid light (addressable LED). Inside the frame, the formless energy condenses into streaks of smoke moving through the ethereal space before crystallizing into stained glass panes, their colors refracting around the room (projected media). Fragments drift and rotate aimlessly before suddenly snapping together, forming a bridge that stretches infinitely into the horizon. One by one the panes collapse into one another, the horizon magically approaching the gate until there is only one solid frame before them. After a beat, it slides away, unveiling another world (moving scrim).

Tentatively, the guests cross the threshold into the Inventor's Fair, a grand atrium which is equal parts art museum, laboratory, and workshop, every surface filled with sculptures that are industrially enchanted. Near the center of the room, a docent is startled by the group's arrival, caught mid demonstration as they spin a large sphere within its base. With each turn, the skylight above reveals another portion of deep space full of planets, stars, and nebulae. They beckon guests forward, eager to share all the wonders they've discovered here.

Guests begin to explore the room encountering a series of interactive curiosities while their guides help them navigate. A fractal sculpture ripples in impossible patterns, its geometry bending in and out of higher dimensions (media enhanced sculpture). Guests can pull parts from serval containers to build their own creature similar to the clockwork cat watching them as they build, occasionally stretching lazily. Near most objects are terminals which guests can use

to learn more about this interactive, who designed it, how it works, and how they can build something similar themselves.

Periodically, sections of the guests' pendants illuminate and begin to buzz signaling they should move to the main terminal at the opposite side of the room. Each guide knows that the members of this group share a vision of the world and the next section, the Alien Forest, changes to fit their expectations. Ultimately, guests have agency to pick which they want to experience, but one of the times is suggested as the guide thinks this is what they desire.

Each group of guest passing through the Alien Forest follows a different path, the sounds, smells, time of day, creatures, and interactions are all based on what they've done previously. The forest changes throughout the evening, at dusk is a beautiful golden hour, sunlight shining down through the canopy where the majesty of nature can be experienced. In twilight predators emerge and only those who are brave should enter. At night the wood sprites awaken, illuminating the space in a magical bioluminescent glow. The path winds through organic architecture, the foliage sculpting itself into a column while rocks pile themselves into a natural pathway.

Many of the plants react to the passive actions of the guests: spherical orbs act as a sound bath for those who hold them near, flowers bloom and bell plants chime as guests pass (practical), vines grow before in whiplash curves as guests watch (media), lantern plants illuminate more radiantly the more guests move in their presence (motion sensor). Some guest may discover a fallen tree hosts clusters of glowing insects that can be playfully chased, smushed, or protected. Other guests may choose to sit in the sensory garden, pausing to breath and listen to the ambience or enjoy the fragrances of various plants.

Occasional clearings in the foliage allow guests to see deeper into the forest (interactive LED) revealing various aspects of life in the forest depending on guest behavior. Calm guests find wood sprites that float peacefully, illuminating everything they land with a bioluminescent glow. Adventurous guests follow a shadow to find a large creature entangled in vines which they can choose to free. Creative guests can sculpt their environments using hand gestures to guide the growth of flowers in real-time.

Guests exit the Alien Forest into The Heart of the Nexus. A docent explains the massive crystal astrolabe above their heads is the center of this reality. Windows above show the same infinite stained glass planes that reveal glimpses into possible world (projection), geometric crystals grow from the ground, other worlds visible within (internal projection), and objects from familiar worlds are scattered amongst unrecognizable ones.

The docent continues, telling guests they have a rare opportunity, they will each be traveling to the edge of the multiverse where the creative energy is most potent. Here, they will see reality being written before their eyes. They encourage guests to speak with their guides to ensure every aspect of their upcoming adventure is perfect. They do this through one of the many interactive terminals similar to the Design Your Guide interactive found around the room confirming their predicted theme is one they'd enjoy, how thrilling it should be, and if they want to connect with another guide if they haven't yet done so.

Periodically, the astrolabe begins to rotate, triggering transformation throughout the room correlating to the theme of the next group's finale. Water rushes up against the windows showing alien coral reefs and strange structures waiting to be explored, water drains and a biomechanical forest grows in its place, fog thickens into clouds transporting the room to the

sky where clouds are being forged. These transformations not only build anticipation for that group but also hint at what different endings may be available for guests who have not yet confirmed their adventure.

Guests arrive at a central hub lined with portals, each leading to a craft ready to take them to the edge of reality. Docents guide each guest to their portal, where the pendant is placed into a recessed surface (pendant return), activating the vessel and linking it to the guest's guide. As the doors open, guests step inside, take a seat (motion ride platform), and look through a domed window to the boundless expanse of the Nexus (projection).

Once in flight, their guides appear to help reorient guests to their upcoming journey. Guests go on one of eight possible journeys: The Verdant Machine shows true harmony between technology and nature, The Stormlight Citadel has guests weaving through a powerful thunderstorm, The Celestial Forge rethinks stellar formation as sculpture, in The Volcanic Renewal an eruption causes chaos before it's shown how this brings new resources into the environment, The Coral Reef begins peaceful but sinks the mysterious depths, or the final adventure where guests travel Beyond the Infinite into an abstract art inspired world.

After completing their journey, guests return to the hub. They step out and walk down a small hallway, passing through a portal similar to the one at the entrance and into back to the warehouse seeing that it has changed as much as they have. Shipping crates now double as display pedestals for interactive merchandise. Guests are invited to find a piece to remember their experience whether it is an off the shelf product or a custom video of them in their finale.

## Floor Plan

Length – 150’ (45.72m)  Width – 100’ (30.48m)  Area – 15,000sqft. (1393.54m$^2$)

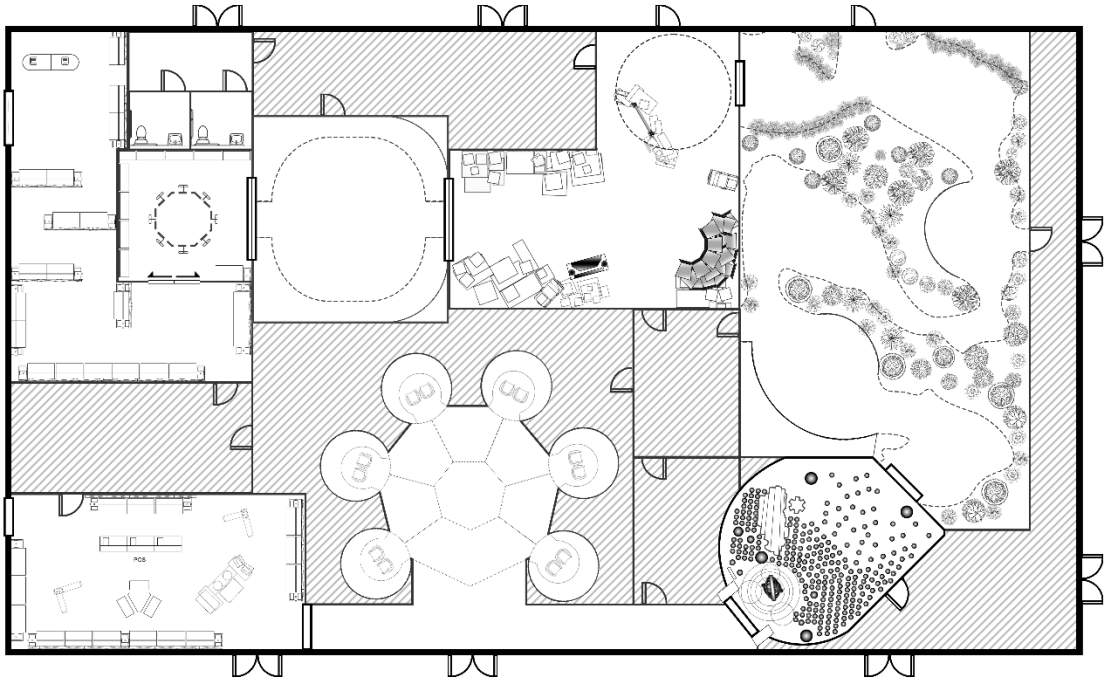

Figure 13. Floorplan of The Nexus. Original Diagram: McGowan, 2025

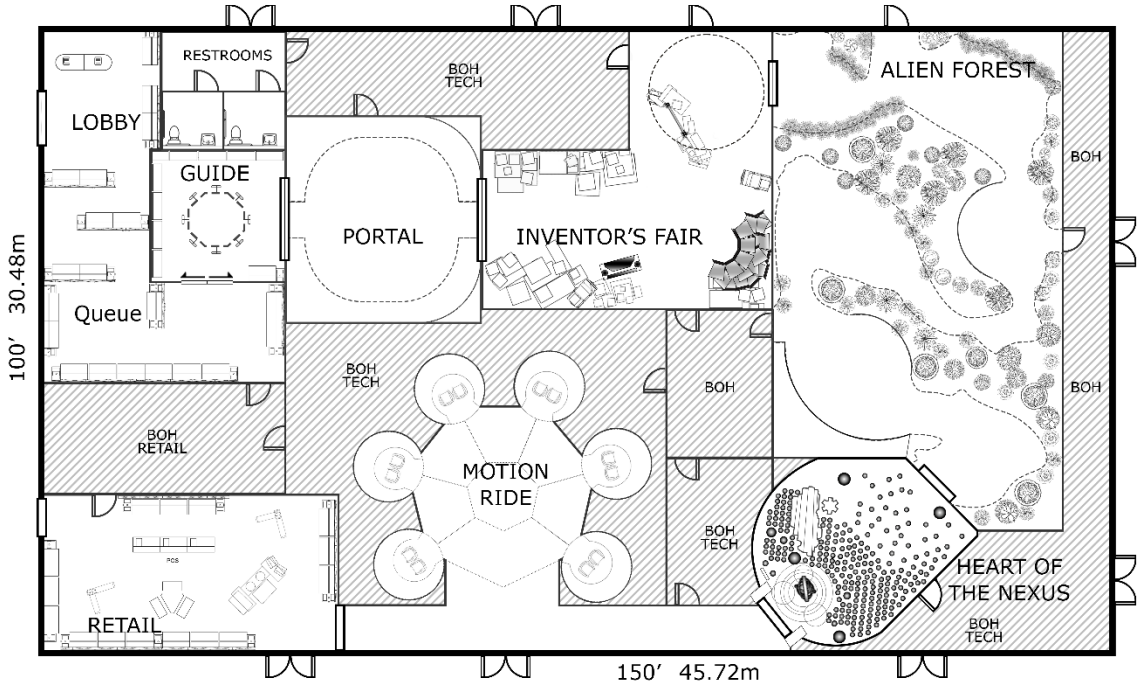


Figure 14. Floorplan of The Nexus, Zones. Original Diagram: McGowan, 2025

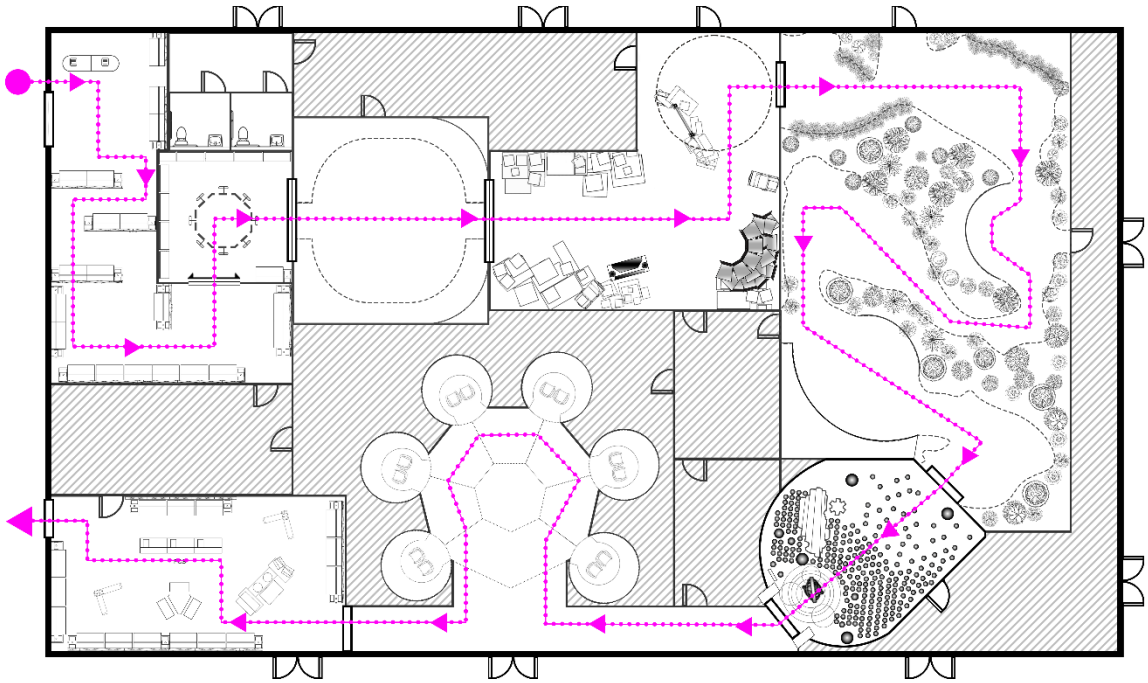

Figure 15. Floorplan of The Nexus, Guest Path. Original Diagram: McGowan, 2025

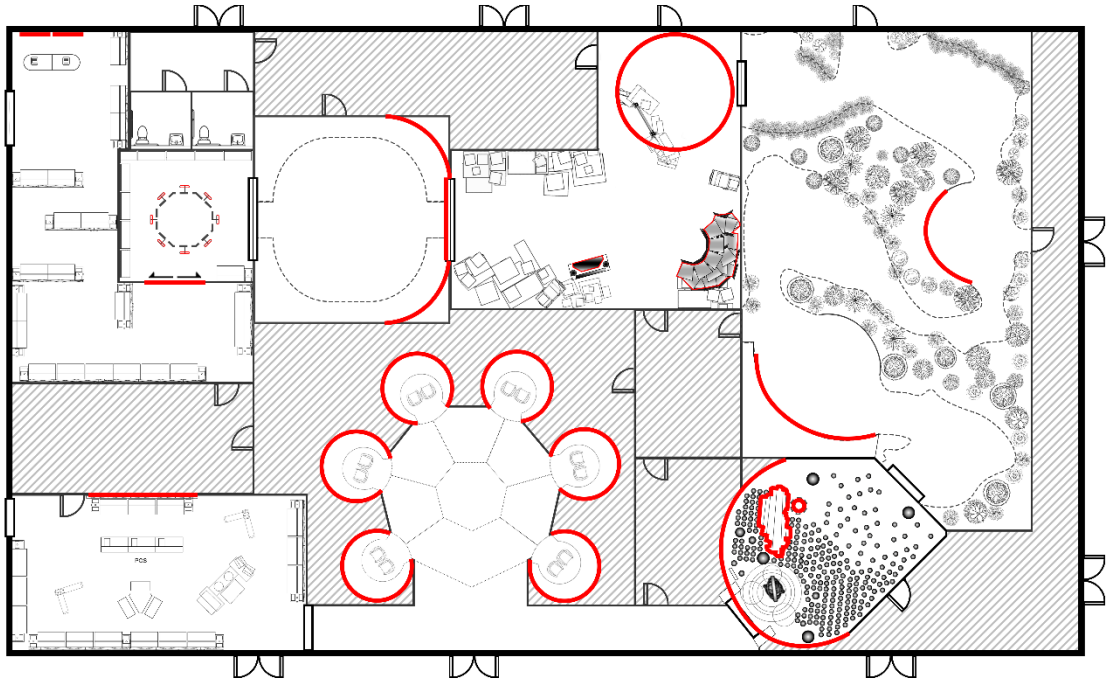

Figure 16. Floorplan of The Nexus, Media. Original Diagram: McGowan, 2025

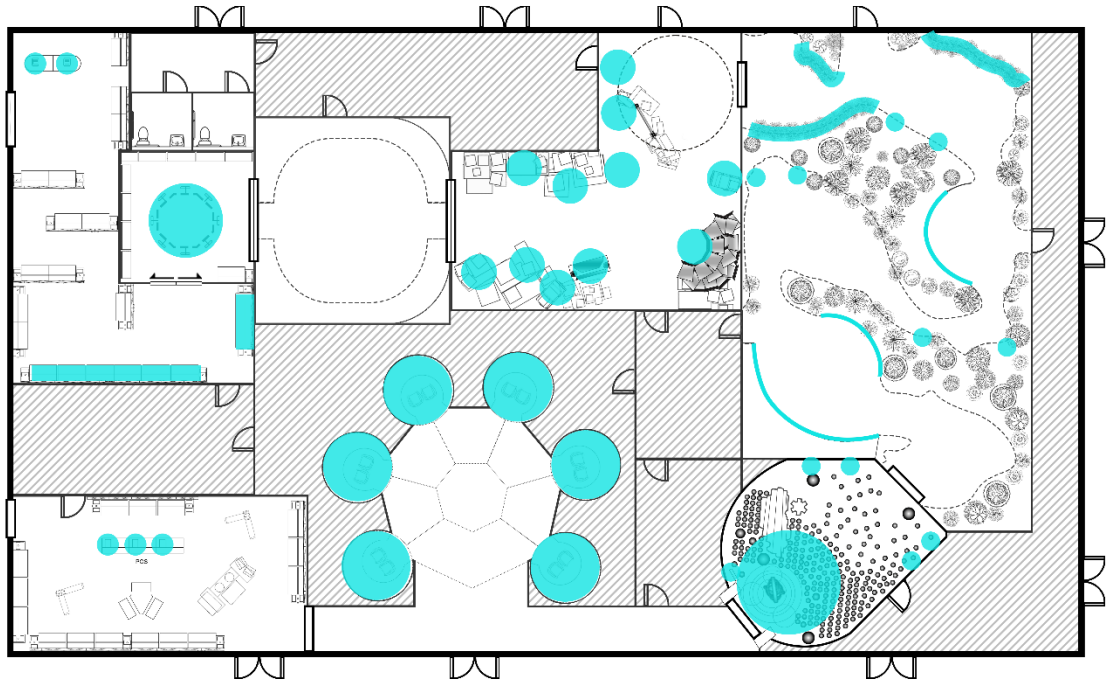

Figure 17. Floorplan of The Nexus, Interactives. Original Diagram: McGowan, 2025

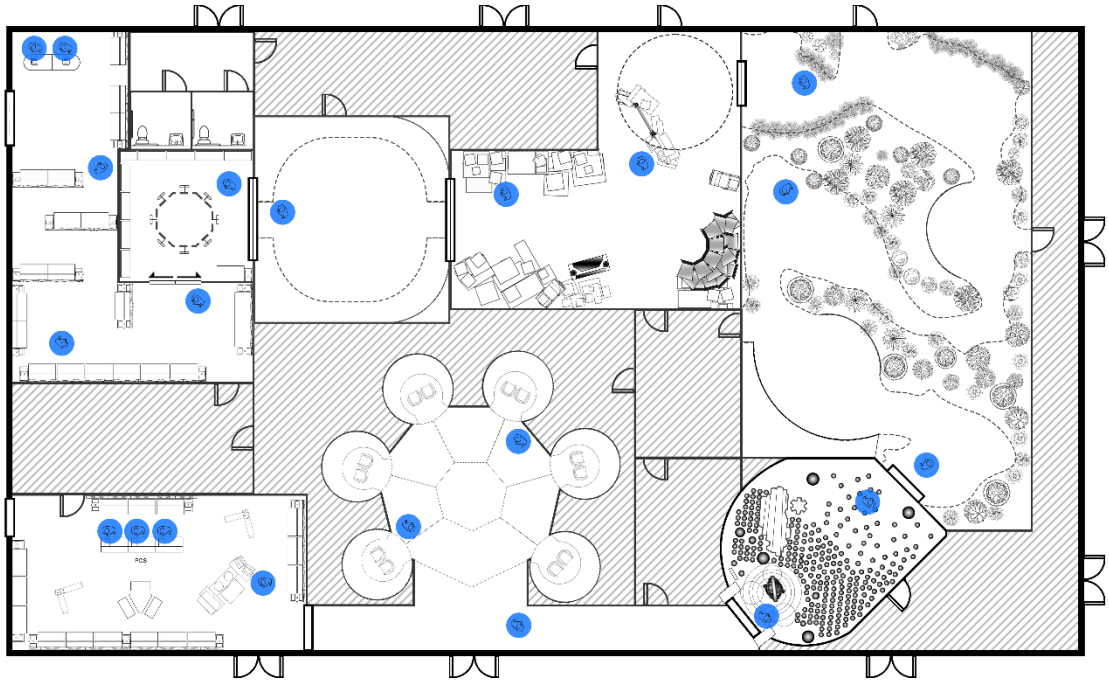

Figure 18. Floorplan of The Nexus, Staff. Original Diagram: McGowan, 2025

## Renders

### Facade


Figure 19. The Nexus: Façade. Maya Model: McGowan, 2025


Figure 20. The Nexus: Façade. Meshy.ai Image to 3D Render: McGowan, 2025

**Portal Room**

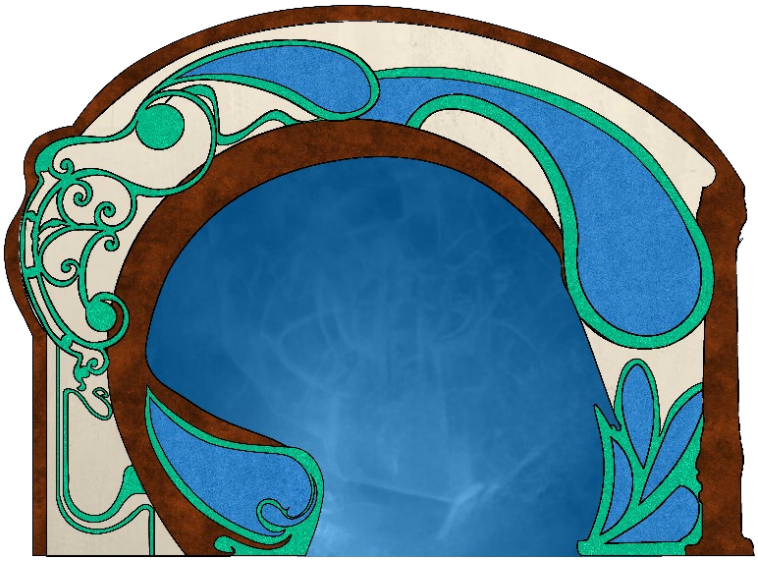

Figure 21. Portal to The Nexus. Digital Drawing: McGowan, 2025

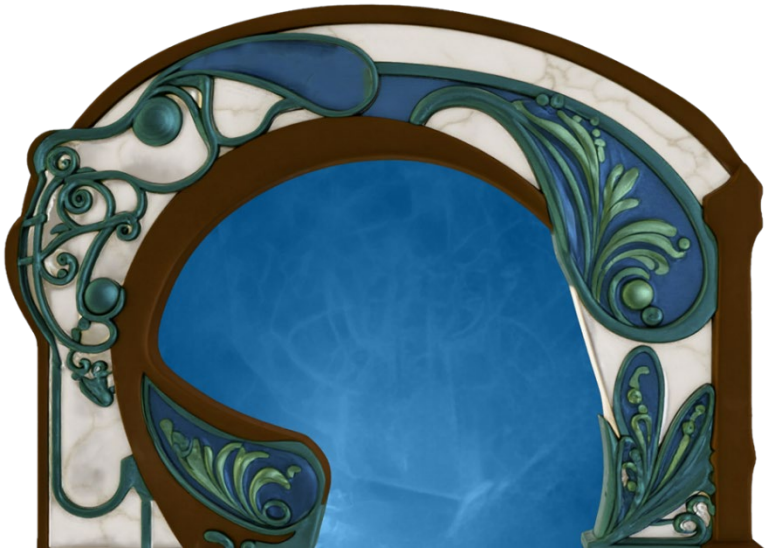

Figure 22. Portal to The Nexus. Meshy.ai Image to 3D Render: McGowan, 2025

**Alien Forest**

Figure 23. Alien Forest: White Model. Unreal Engine Render: McGowan, 2025

Figure 24. Alien Forest: No Overlay. Unreal Engine Render: McGowan, 2025

Figure 25. Alien Forest: Golden Hour Overlay. Unreal Engine Render: McGowan, 2025

Figure 26. Alien Forest: Golden Hour Overlay, No Guests. Unreal Engine Render: McGowan, 2025

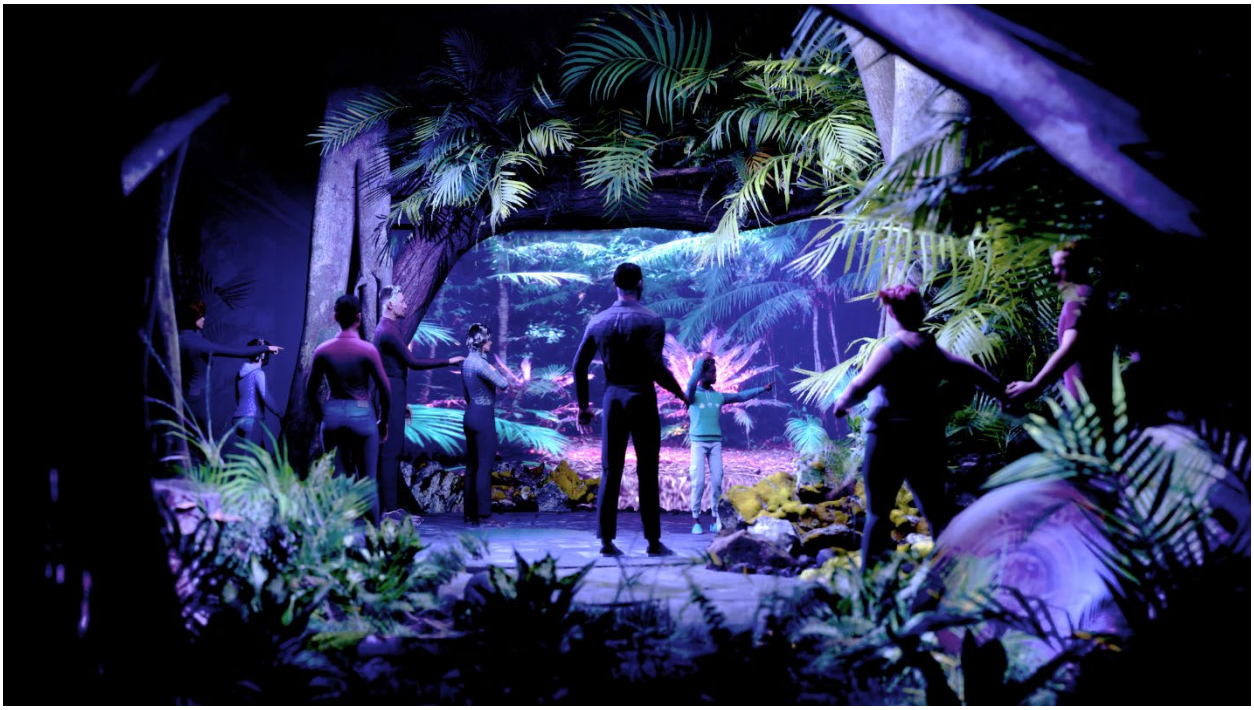

Figure 27. Alien Forest: Bioluminescent Overlay. Unreal Engine Render: McGowan, 2025

Figure 28. Alien Forest: Bioluminescent Overlay, No Guests. Unreal Engine Render: McGowan, 2025

**The Heart of the Nexus**

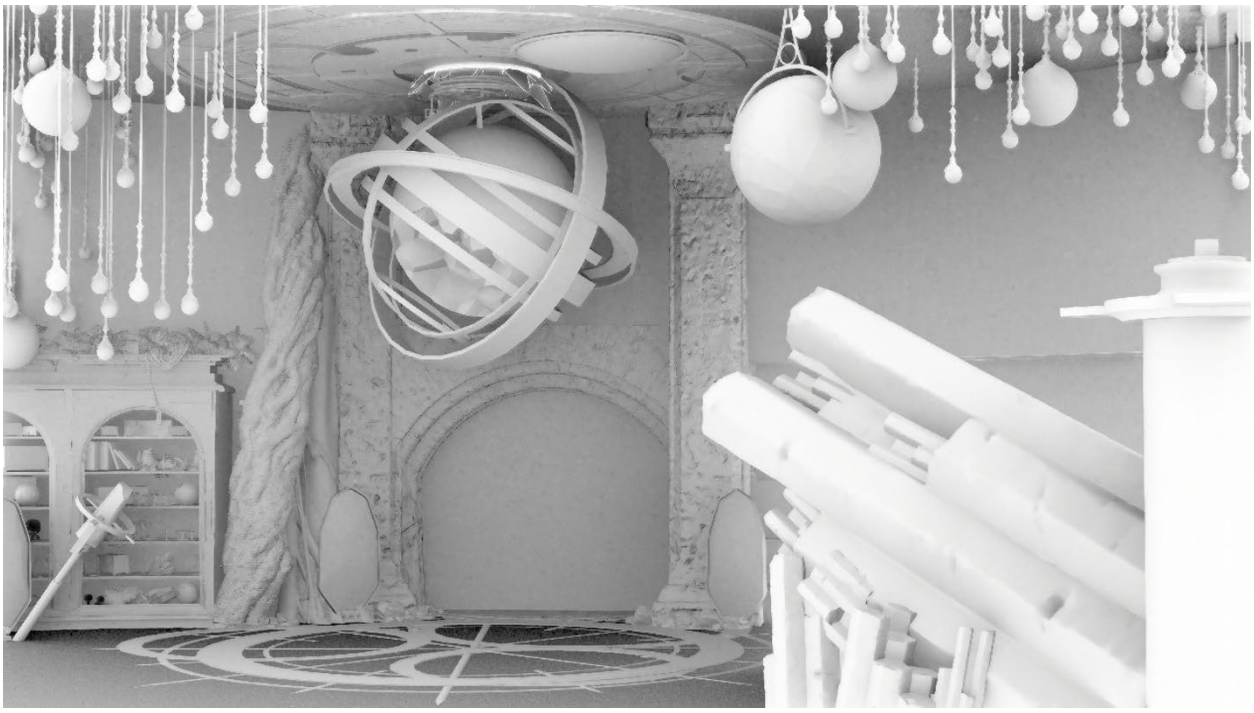

Figure 29. The Heart of the Nexus: White Model. Unreal Engine Render: McGowan, 2025

Figure 30. The Heart of the Nexus: No Overlay. Unreal Engine Render: McGowan, 2025

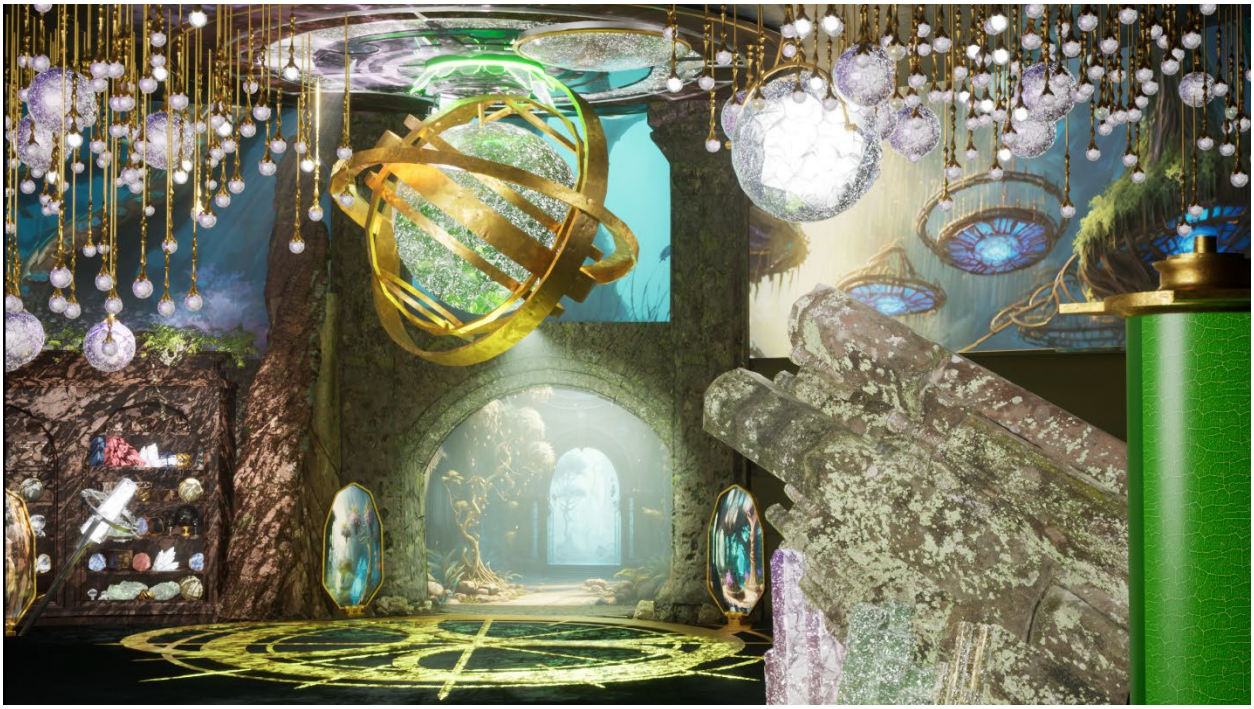

Figure 31. The Heart of the Nexus: Forest Overlay. Unreal Engine Render: McGowan, 2025

Figure 32. The Heart of the Nexus: Space Overlay. Unreal Engine Render: McGowan, 2025

Figure 33. The Heart of the Nexus: Water Overlay. Unreal Engine Render: McGowan, 2025

**The Nexus Recommendation System**

Below is the content filtering factors table. Each outcome of the interactives are listed along with their associated factors as measured by the USA Kelly Situational Data (Kelly, 2023). Evaluation (EVAL) is its association with good or bad, power (PWR) is weak or strong, action (ACT) is active vs passive. The associated ride vehicle motion factor (MTN) is multiplied by the standard programmed motion for each ending. So, for example, if a guest's motion factor is 0.50 it would reduce the 30° rotation to 15° in that same time period making for a smoother ride.

Adventure (ADV), tension (TEN), and fantasy (FAN) are dictated by designers at first with how closely they're associated with those factors. Adventure is how closely it aligns with a typical adventure narrative, tension is how much suspense is built in, and fantasy is how realistic vs fantastical its associated to be.

Each chosen factor is multiplied by the interactives weight (WT.) which increases or decreases how large a factor it will be in the final calculation. For example, the pendant interaction is meant to be quite important, so it has a weight of 3.00 while the color of your guide is less significant, so it has a weight of 0.50 which makes the pendant choice six times more impactful to the RS.

Table 9. Interactive Factor Scores

| Interactive | Choice | WT. | EVAL | PWR | Act | MTN | ADV | TEN | FAN |
|---|---|---|---|---|---|---|---|---|---|
| Pendant | Clockwork | 3.00 | 0.56 | 0.75 | 0.68 | 0.15 | 0.45 | 0.10 | 0.60 |
| Pendant | Galaxy | 3.00 | 0.51 | 1.00 | 0.72 | 0.10 | 0.35 | 0.05 | 0.85 |
| Pendant | Moon | 3.00 | 0.47 | 0.83 | 0.44 | 0.10 | 0.30 | 0.05 | 0.80 |
| Pendant | Opal | 3.00 | 0.69 | 0.59 | 0.42 | 0.05 | 0.25 | 0.05 | 0.70 |
| Pendant | Stained Glass | 3.00 | 0.63 | 0.32 | 0.63 | 0.10 | 0.35 | 0.05 | 0.75 |
| Pendant | Wood Medallion | 3.00 | 0.75 | 0.48 | 0.57 | 0.05 | 0.20 | 0.05 | 0.50 |
| DYG - Color | Black | 0.50 | 0.61 | 0.53 | 0.59 | 0.50 | 0.50 | 0.50 | 0.50 |
| DYG - Color | Blue | 0.50 | 0.22 | 0.20 | 0.13 | 0.50 | 0.50 | 0.50 | 0.50 |
| DYG - Color | Brown | 0.50 | 0.18 | 0.10 | 0.06 | 0.50 | 0.50 | 0.50 | 0.50 |
| DYG - Color | Green | 0.50 | 0.31 | 0.28 | 0.19 | 0.50 | 0.50 | 0.50 | 0.50 |
| DYG - Color | Orange | 0.50 | 0.38 | 0.27 | 0.41 | 0.50 | 0.50 | 0.50 | 0.50 |
| DYG - Color | Purple | 0.50 | 0.43 | 0.29 | 0.35 | 0.50 | 0.50 | 0.50 | 0.50 |
| DYG - Color | Red | 0.50 | 0.48 | 0.36 | 0.54 | 0.50 | 0.50 | 0.50 | 0.50 |
| DYG - Color | White | 0.50 | 0.74 | 0.59 | 0.47 | 0.50 | 0.50 | 0.50 | 0.50 |
| DYG - Color | Yellow | 0.50 | 0.51 | 0.41 | 0.63 | 0.50 | 0.50 | 0.50 | 0.50 |
| DYG - Pers. | Curious | 0.75 | 0.84 | 0.67 | 0.65 | 0.25 | 0.70 | 0.15 | 0.70 |
| DYG - Pers. | Serious | 0.75 | 0.70 | 0.66 | 0.38 | 0.10 | 0.50 | 0.30 | 0.40 |
| DYG - Pers. | Energetic | 0.75 | 0.87 | 0.81 | 0.93 | 0.60 | 0.85 | 0.40 | 0.60 |
| DYG - Pers. | Helpful | 0.75 | 0.94 | 0.81 | 0.69 | 0.35 | 0.75 | 0.10 | 0.55 |
| DYG - Species | Beetle | 2.00 | 0.31 | 0.68 | 0.46 | 0.20 | 0.50 | 0.10 | 0.65 |
| DYG - Species | Butterfly | 2.00 | 1.00 | 0.19 | 0.67 | 0.15 | 0.45 | 0.05 | 0.80 |
| DYG - Species | Firefly | 2.00 | 0.87 | 0.36 | 0.79 | 0.15 | 0.50 | 0.05 | 0.85 |
| DYG - Species | Spider | 2.00 | 0.22 | 0.63 | 0.42 | 0.25 | 0.55 | 0.20 | 0.70 |
| DYG - Species | Bat | 2.00 | 0.28 | 0.80 | 0.62 | 0.50 | 0.75 | 0.40 | 0.60 |
| DYG - Species | Eagle | 2.00 | 0.80 | 0.71 | 0.71 | 0.70 | 0.90 | 0.30 | 0.50 |
| DYG - Species | Owl | 2.00 | 0.60 | 0.65 | 0.62 | 0.55 | 0.80 | 0.25 | 0.55 |
| DYG - Species | Pteranodon | 2.00 | 0.33 | 0.90 | 0.73 | 0.80 | 0.95 | 0.50 | 0.75 |
| DYG - Species | Elephant | 2.00 | 0.63 | 0.93 | 0.66 | 0.50 | 0.65 | 0.20 | 0.50 |
| DYG - Species | Fox | 2.00 | 0.50 | 0.59 | 0.74 | 0.45 | 0.70 | 0.15 | 0.55 |
| DYG - Species | Tiger | 2.00 | 0.45 | 0.80 | 0.63 | 0.75 | 0.90 | 0.45 | 0.60 |
| DYG - Species | Wolf | 2.00 | 0.32 | 0.77 | 0.76 | 0.70 | 0.85 | 0.40 | 0.55 |
| DYG - Species | Human, Artist | 2.00 | 0.64 | 0.39 | 0.46 | 0.20 | 0.70 | 0.15 | 0.80 |
| DYG - Species | Human, Child | 2.00 | 0.73 | 0.57 | 0.71 | 0.25 | 0.60 | 0.10 | 0.70 |
| DYG - Species | Human, Muscle | 2.00 | 0.46 | 0.77 | 0.62 | 0.50 | 0.80 | 0.35 | 0.50 |
| DYG - Species | Human, Scholar | 2.00 | 0.71 | 0.45 | 0.78 | 0.10 | 0.50 | 0.15 | 0.60 |
| DYG - Species | Dragon | 2.00 | 0.37 | 0.84 | 0.47 | 0.90 | 1.00 | 0.60 | 0.95 |
| DYG - Species | Fairy | 2.00 | 0.90 | 0.34 | 0.65 | 0.25 | 0.70 | 0.15 | 1.00 |
| DYG - Species | Phoenix | 2.00 | 0.61 | 0.57 | 0.48 | 0.85 | 0.95 | 0.55 | 0.90 |
| DYG - Species | Unicorn | 2.00 | 0.98 | 0.48 | 0.32 | 0.40 | 0.80 | 0.20 | 1.00 |

| Interactive | Choice | WT. | EVAL | PWR | Act | MTN | ADV | TEN | FAN |
|---|---|---|---|---|---|---|---|---|---|
| DYG - Species | Hologram | 2.00 | 0.50 | 0.75 | 0.59 | 0.30 | 0.65 | 0.25 | 0.75 |
| DYG - Species | Clockwork Dog | 2.00 | 0.52 | 0.49 | 0.40 | 0.35 | 0.70 | 0.20 | 0.70 |
| DYG - Species | Clockwork Owl | 2.00 | 0.51 | 0.49 | 0.29 | 0.25 | 0.65 | 0.15 | 0.65 |
| DYG - Species | Drone | 2.00 | 0.57 | 0.33 | 0.31 | 0.50 | 0.75 | 0.30 | 0.60 |
| INV – Clk Ctr. | Body - Option 1 | 1.00 | 0.52 | 0.67 | 0.96 | 0.50 | 0.80 | 0.25 | 0.70 |
| INV – Clk Ctr. | Body - Option 2 | 1.00 | 0.86 | 0.56 | 0.44 | 0.50 | 0.80 | 0.25 | 0.70 |
| INV – Clk Ctr. | Body - Option 3 | 1.00 | 0.56 | 0.28 | 0.30 | 0.50 | 0.80 | 0.25 | 0.70 |
| INV – Clk Ctr. | Head - Option 1 | 1.00 | 0.67 | 0.07 | 0.69 | 0.25 | 0.65 | 0.15 | 0.65 |
| INV – Clk Ctr. | Head - Option 2 | 1.00 | 0.76 | 0.52 | 0.98 | 0.25 | 0.65 | 0.15 | 0.65 |
| INV – Clk Ctr. | Head - Option 3 | 1.00 | 0.44 | 0.18 | 0.97 | 0.25 | 0.65 | 0.15 | 0.65 |
| INV – Clk Ctr. | Legs - Option 1 | 1.00 | 0.15 | 0.09 | 0.45 | 0.60 | 0.85 | 0.30 | 0.70 |
| INV – Clk Ctr. | Legs - Option 2 | 1.00 | 0.67 | 0.03 | 0.29 | 0.60 | 0.85 | 0.30 | 0.70 |
| INV – Clk Ctr. | Legs - Option 3 | 1.00 | 0.37 | 0.37 | 0.86 | 0.60 | 0.85 | 0.30 | 0.70 |
| INV – Clk Ctr. | Pers. - Playful | 1.00 | 0.82 | 0.65 | 0.84 | 0.40 | 0.80 | 0.15 | 0.80 |
| INV – Clk Ctr. | Pers. - Scary | 1.00 | 0.00 | 0.60 | 0.70 | 0.55 | 0.85 | 0.50 | 0.65 |
| INV – Clk Ctr. | Pers. - Sleepy | 1.00 | 0.62 | 0.58 | 0.44 | 0.10 | 0.40 | 0.05 | 0.55 |
| INV – Cloud. | No Interaction | 0.50 | 0.42 | 0.26 | 0.14 | 0.05 | 0.20 | 0.05 | 0.60 |
| INV – Cloud. | Observation | 0.50 | 0.62 | 0.44 | 0.20 | 0.10 | 0.30 | 0.10 | 0.65 |
| INV – Cloud. | Rotate, Controlled | 0.50 | 0.25 | 0.80 | 0.64 | 0.30 | 0.50 | 0.15 | 0.70 |
| INV – Cloud. | Rotate, Free | 0.50 | 0.27 | 0.41 | 0.85 | 0.45 | 0.65 | 0.20 | 0.80 |
| INV - Kiosk | 1 | 0.50 | 0.73 | 0.49 | 0.52 | 0.05 | 0.25 | 0.05 | 0.60 |
| INV - Kiosk | 2 | 0.50 | 0.73 | 0.49 | 0.52 | 0.10 | 0.30 | 0.10 | 0.65 |
| INV - Kiosk | 3+ | 0.50 | 0.73 | 0.49 | 0.52 | 0.15 | 0.35 | 0.15 | 0.70 |
| INV - Kiosk | No Interaction | 0.50 | 0.42 | 0.26 | 0.14 | 0.00 | 0.10 | 0.00 | 0.50 |
| INV - Painting | No Interaction | 1.00 | 0.42 | 0.26 | 0.14 | 0.05 | 0.20 | 0.05 | 0.70 |
| INV - Painting | Organized | 1.00 | 0.83 | 0.65 | 0.61 | 0.25 | 0.65 | 0.10 | 0.85 |
| INV - Painting | Abstract | 1.00 | 0.27 | 0.41 | 0.85 | 0.40 | 0.70 | 0.15 | 0.90 |
| INV - Painting | Int. - Average | 1.00 | 0.50 | 0.50 | 0.50 | 0.30 | 0.60 | 0.10 | 0.80 |
| INV - Painting | Int. - High | 1.00 | 0.83 | 0.65 | 0.61 | 0.50 | 0.80 | 0.15 | 0.85 |
| INV - Painting | Int. - Low | 1.00 | 0.62 | 0.44 | 0.20 | 0.15 | 0.40 | 0.05 | 0.75 |
| INV - Painting | Observation | 1.00 | 0.64 | 0.81 | 0.82 | 0.10 | 0.35 | 0.05 | 0.70 |
| INV - Sphere | Discovery | 2.00 | 0.80 | 0.67 | 0.62 | 0.20 | 0.60 | 0.10 | 0.85 |
| INV - Sphere | Dive Deeper | 2.00 | 0.80 | 0.67 | 0.62 | 0.30 | 0.70 | 0.15 | 0.90 |
| INV - Sphere | No Interaction | 2.00 | 0.42 | 0.26 | 0.14 | 0.00 | 0.10 | 0.00 | 0.50 |
| INV - Sphere | Observation | 2.00 | 0.62 | 0.44 | 0.20 | 0.10 | 0.35 | 0.05 | 0.75 |
| INV - Sphere | Rotate, Controlled | 2.00 | 0.25 | 0.80 | 0.64 | 0.40 | 0.65 | 0.10 | 0.80 |
| INV - Sphere | Rotate, Free | 2.00 | 0.27 | 0.41 | 0.85 | 0.55 | 0.80 | 0.15 | 0.90 |
| AF - Mimic | No Interaction | 2.00 | 0.42 | 0.26 | 0.14 | 0.05 | 0.20 | 0.05 | 0.60 |
| AF - Mimic | Call - 1 | 2.00 | 0.80 | 0.67 | 0.72 | 0.30 | 0.70 | 0.10 | 0.75 |
| AF - Mimic | Call - 2 | 2.00 | 0.80 | 0.67 | 0.72 | 0.35 | 0.75 | 0.15 | 0.80 |
| AF - Mimic | Call - 3 | 2.00 | 0.80 | 0.67 | 0.72 | 0.40 | 0.80 | 0.20 | 0.85 |

| Interactive | Choice | WT. | EVAL | PWR | Act | MTN | ADV | TEN | FAN |
|---|---|---|---|---|---|---|---|---|---|
| AF - Mimic | Observation | 2.00 | 0.62 | 0.44 | 0.20 | 0.10 | 0.35 | 0.05 | 0.70 |
| AF - Glow | Int. - Average | 0.50 | 0.66 | 0.66 | 0.49 | 0.20 | 0.55 | 0.05 | 0.80 |
| AF - Glow | Int. - High | 0.50 | 0.66 | 0.66 | 0.49 | 0.40 | 0.75 | 0.10 | 0.90 |
| AF - Glow | Int. - Low | 0.50 | 0.66 | 0.66 | 0.49 | 0.15 | 0.40 | 0.05 | 0.70 |
| AF - Glow | No Int. | 0.50 | 0.42 | 0.26 | 0.14 | 0.00 | 0.10 | 0.00 | 0.50 |
| AF - Blooming | Accel - Average | 1.50 | 0.50 | 0.50 | 0.50 | 0.30 | 0.65 | 0.10 | 0.75 |
| AF - Blooming | Accel - Erratic | 1.50 | 0.27 | 0.41 | 0.85 | 0.55 | 0.85 | 0.20 | 0.80 |
| AF - Blooming | Accel - Smooth | 1.50 | 0.58 | 0.52 | 0.48 | 0.25 | 0.55 | 0.05 | 0.75 |
| AF - Blooming | Observation | 1.50 | 0.62 | 0.44 | 0.20 | 0.10 | 0.35 | 0.05 | 0.70 |
| AF - Blooming | Walk - Average | 1.50 | 0.50 | 0.50 | 0.50 | 0.30 | 0.65 | 0.10 | 0.75 |
| AF - Blooming | Walk - Fast | 1.50 | 0.56 | 0.54 | 0.57 | 0.50 | 0.80 | 0.15 | 0.80 |
| AF - Blooming | Walk - Slow | 1.50 | 0.57 | 0.53 | 0.47 | 0.15 | 0.40 | 0.05 | 0.70 |
| AF - Blooming | Walk - Erratic | 1.50 | 0.27 | 0.41 | 0.85 | 0.55 | 0.85 | 0.20 | 0.80 |
| AF - Blooming | Walk - Reverse | 1.50 | 0.27 | 0.41 | 0.85 | 0.20 | 0.50 | 0.05 | 0.70 |
| AF - Blooming | Walk - Smooth | 1.50 | 0.58 | 0.52 | 0.48 | 0.25 | 0.55 | 0.05 | 0.75 |
| AF - HnS | Observation | 1.00 | 0.62 | 0.44 | 0.20 | 0.10 | 0.40 | 0.05 | 0.70 |
| AF - HnS | Walk - Average | 1.00 | 0.50 | 0.50 | 0.50 | 0.25 | 0.65 | 0.10 | 0.75 |
| AF - HnS | Walk - Fast | 1.00 | 0.56 | 0.54 | 0.57 | 0.50 | 0.85 | 0.20 | 0.80 |
| AF - HnS | Walk - Slow | 1.00 | 0.57 | 0.53 | 0.47 | 0.15 | 0.40 | 0.05 | 0.70 |
| AF - HnS | Walk - Erratic | 1.00 | 0.27 | 0.41 | 0.85 | 0.55 | 0.85 | 0.25 | 0.80 |
| AF - HnS | Walk - Smooth | 1.00 | 0.58 | 0.52 | 0.48 | 0.25 | 0.55 | 0.05 | 0.75 |
| AF - Kiosk | 1 | 1.00 | 0.73 | 0.49 | 0.52 | 0.50 | 0.50 | 0.40 | 0.60 |
| AF - Kiosk | 2 | 1.00 | 0.73 | 0.49 | 0.52 | 0.40 | 0.40 | 0.45 | 0.50 |
| AF - Kiosk | 3 | 1.00 | 0.73 | 0.49 | 0.52 | 0.30 | 0.30 | 0.50 | 0.40 |
| AF - Kiosk | 4+ | 1.00 | 0.73 | 0.49 | 0.52 | 0.20 | 0.20 | 0.55 | 0.30 |
| AF - Music | Observation | 1.00 | 0.62 | 0.44 | 0.20 | 0.10 | 0.35 | 0.05 | 0.70 |
| AF - Music | Organized | 1.00 | 0.58 | 0.52 | 0.48 | 0.25 | 0.60 | 0.05 | 0.85 |
| AF - Music | Abstract | 1.00 | 0.27 | 0.41 | 0.85 | 0.35 | 0.70 | 0.10 | 0.90 |
| AF - Music | Int. - Average | 1.00 | 0.50 | 0.50 | 0.50 | 0.30 | 0.60 | 0.05 | 0.80 |
| AF - Music | Int. - High | 1.00 | 0.66 | 0.66 | 0.49 | 0.50 | 0.80 | 0.15 | 0.90 |
| AF - Music | Int. - Low | 1.00 | 0.66 | 0.66 | 0.49 | 0.15 | 0.40 | 0.05 | 0.70 |
| AF - Music | No Int. | 1.00 | 0.42 | 0.26 | 0.14 | 0.00 | 0.10 | 0.00 | 0.50 |
| AF - Save | Observation | 1.00 | 0.62 | 0.44 | 0.20 | 0.10 | 0.40 | 0.20 | 0.70 |
| AF - Save | Assist | 1.00 | 0.99 | 0.89 | 0.74 | 0.50 | 0.85 | 0.40 | 0.75 |
| AF - Save | No Assist | 1.00 | 0.08 | 0.34 | 0.32 | 0.10 | 0.35 | 0.25 | 0.65 |
| AF - Save | No Interaction | 1.00 | 0.42 | 0.26 | 0.14 | 0.00 | 0.10 | 0.10 | 0.50 |
| AF - Save | Wait, Assist | 1.00 | 0.99 | 0.79 | 0.64 | 0.30 | 0.65 | 0.30 | 0.70 |
| AF - Save | Wait, No Assist | 1.00 | 0.08 | 0.34 | 0.32 | 0.10 | 0.35 | 0.20 | 0.65 |
| AF - Sense | No Int. | 1.00 | 0.42 | 0.26 | 0.14 | 0.00 | 0.10 | 0.00 | 0.60 |
| AF - Sense | Orb - 1 | 1.00 | 0.70 | 0.62 | 0.53 | 0.15 | 0.40 | 0.05 | 0.75 |
| AF - Sense | Orb - 2 | 1.00 | 0.70 | 0.62 | 0.53 | 0.25 | 0.50 | 0.10 | 0.80 |

| Interactive | Choice | WT. | EVAL | PWR | Act | MTN | ADV | TEN | FAN |
|---|---|---|---|---|---|---|---|---|---|
| AF - Sense | Orb - 3+ | 1.00 | 0.70 | 0.62 | 0.53 | 0.35 | 0.60 | 0.15 | 0.85 |
| AF - Sense | Orb - No Int. | 1.00 | 0.42 | 0.26 | 0.14 | 0.05 | 0.20 | 0.05 | 0.65 |
| AF - Sense | Move - Average | 1.00 | 0.50 | 0.50 | 0.50 | 0.30 | 0.55 | 0.10 | 0.75 |
| AF - Sense | Move - Fast | 1.00 | 0.56 | 0.54 | 0.57 | 0.55 | 0.80 | 0.15 | 0.80 |
| AF - Sense | Move - Slow | 1.00 | 0.57 | 0.53 | 0.47 | 0.15 | 0.40 | 0.05 | 0.70 |
| AF - Sense | Move - Still | 1.00 | 0.90 | 0.66 | 0.16 | 0.05 | 0.20 | 0.05 | 0.60 |
| AF - Sprite | No Int. | 1.00 | 0.42 | 0.26 | 0.14 | 0.00 | 0.10 | 0.00 | 0.65 |
| AF - Sprite | Move - Average | 1.00 | 0.50 | 0.50 | 0.50 | 0.25 | 0.60 | 0.10 | 0.75 |
| AF - Sprite | Move - Erratic | 1.00 | 0.27 | 0.41 | 0.85 | 0.55 | 0.85 | 0.20 | 0.80 |
| AF - Sprite | Move - Slow | 1.00 | 0.57 | 0.53 | 0.47 | 0.15 | 0.40 | 0.05 | 0.70 |
| AF - Sprite | Observation | 1.00 | 0.62 | 0.44 | 0.20 | 0.10 | 0.35 | 0.05 | 0.70 |
| HoN - Guide | 1 Change | 1.00 | 0.73 | 0.49 | 0.52 | 0.10 | 0.35 | 0.05 | 0.65 |
| HoN - Guide | 2 Changes | 1.00 | 0.73 | 0.49 | 0.52 | 0.15 | 0.45 | 0.10 | 0.70 |
| HoN - Guide | No Int. | 1.00 | 0.42 | 0.26 | 0.14 | 0.00 | 0.10 | 0.00 | 0.50 |
| HoN - Guide | Paired With Guest | 1.00 | 0.72 | 0.65 | 0.64 | 0.25 | 0.70 | 0.10 | 0.75 |

## Scope Document

This document presents a detailed breakdown of The Nexus's technical components. It is meant to clarify the scope of each department so accurate timelines and budgets can be determined. Below is a table that defines what each category entails.

Table 10. Scope Document Elements Overview

| Overview | The Nexus Scope Document |
|---|---|
| **Animated Figures** | Figures / characters with motion systems designed to perform movements |
| **Animated Props** | Show props with motion systems designed to perform movements |
| **Artificial Foliage** | Synthetic or preserved plants used for scenic |
| **Audio Hardware** | Physical sound equipment such as speakers, amps, and microphones |
| **Graphics/Signage** | Physical or digital visual elements like posters or wayfinding |
| **Interactives** | Guest-facing elements meant to react to input, can be physical or digital |
| **Landscape/Hardscape** | Ground treatments, paving, planters, and rockwork |
| **Media** | Visual or audio content that exist as digital files |
| **Personalization** | Elements influenced by The Nexus' RS |
| **Projection Equipment** | Hardware to display visual content like projectors and LED screens |
| **Scenic Paint** | Surface paint meant to define the color, texture, material, aging |
| **Show Action Equipment** | Mechanized systems that move large-scale elements like walls, doors, and ride vehicles |
| **Show Control Systems** | Central computer hardware and software system that coordinates and automates show elements like lighting, audio, media, and equipment |
| **Show Lighting** | Physical lighting fixtures used during the show |
| **Show Props & Dressing** | Static props that populate the environment such as objects on a shelf |
| **Special Effects** | Nonstandard effects like wind, fog, pyrotechnics, or scent |

### Logline

In this walkthrough attraction, a magical portal transports guests from a mundane warehouse to The Nexus, a multiverse that evolves to reflect the desires of each visitor.

**Scene 1 – Lobby**

Mundane corporate shipping center. Energy in the shape of filigree patterns has been overlaid on every surface. Whatever it touches is transformed into an art nouveau inspired piece of art.

Table 11. The Nexus, Scene 1 - Lobby

| 1 - Lobby | The Nexus Scope Document |
|---|---|
| **Animated Figures** | n/a |
| **Animated Props** | Terminals have LED that light up the associated color of the pendant |
| **Artificial Foliage** | 3x Dusty office plants, neglected<br>2x Art nouveau – orchid, rose bush |
| **Audio Hardware** | Non-themed speakers that can be used dietetically as though they are the offices speaker system |
| **Graphics/Signage** | 20x mundane motivational office posters and other typical corporate signs |
| **Interactives** | Physical: Pendant selection<br>Social: Check in process<br>Digital: Self check in kiosk x2 |
| **Landscape/Hardscape** | Industrial concrete floor with visible wear and grime (work with scenic painting to plan energy filigree overlay patterning)<br>Simple modular shelving units repurposed for queue structure. |
| **Media** | n/a |
| **Personalization** | n/a |

| 1 - Lobby | The Nexus Scope Document |
|---|---|
| **Projection Equipment** | 2x Black light projector<br>To be turned on for 7 seconds at the top of every minute to reveal black light filigree paint patterns |
| **Scenic Paint** | Base: Mundane, boring, cracked, and unloved<br>Overlay: ornate filigree patterns in UV pigments on floor/ceiling/walls. This should be painted as though someone has placed a filigree pattern from a bird's eye view. Paint stretches over the materials. |
| **Show Action Equipment** | n/a |
| **Show Control Systems** | Sync to global attraction network for adaptive event timing<br>Lighting dim, audio cue, and blacklight reveal in timed intervals. |
| **Show Lighting** | Fluorescent overheads with programmed flicker effect<br>Lighting dim for 7 seconds each minute to reveal blacklight transformation<br>Warm accent lighting near pendant display to draw focus |
| **Show Props & Dressing** | Stacks of shipping boxes, industrial shelving, office materials.<br>Transformed objects: origami flowers, brass dragon stapler, leather-bound binders placed in filigree zones. Source from thrift/antique stores where possible. |
| **Special Effects** | n/a |

**Scene 2 – Design Your Guide**

Guests choose one of six pendants and then design their guides using one of the terminals in the center of their room.

Table 12. The Nexus, Scene 2 - Design Your Guide

| 2 - Design Your Guide | The Nexus Scope Document |
|---|---|
| **Animated Figures** | n/a |
| **Animated Props** | Pendants emit pulses of light via addressable LEDs<br>Ring of terminals subtly animates gears, levers, and clockwork |
| **Artificial Foliage** | n/a |
| **Audio Hardware** | Speakers for voiceover narration from the guide<br>16x Small speakers, 2/terminal |
| **Graphics/Signage** | n/a |
| **Interactives** | Design Your Guide |
| **Landscape/Hardscape** | Concrete flooring with filigree paint pattern overlay |
| **Media** | Design Your Guide UX/UI<br>Design Your Guide animations<br>6x Come alive screen (1/pendant) |
| **Personalization** | Terminals have LED that light up the associated color of the pendant<br>Terminals respond to guest choices by changing colors and backgrounds based on their designs |
| **Projection Equipment** | n/a |

| 2 - Design Your Guide | The Nexus Scope Document |
|---|---|
| **Scenic Paint** | Base: mundane, cracked, office-like tones<br>Overlay: ornate filigree patterns extending across walls, floor, and ceiling |
| **Show Action Equipment** | n/a |
| **Show Control Systems** | Sync to global attraction network for adaptive event timing |
| **Show Lighting** | Spotlights on each terminal, dim otherwise |
| **Show Props & Dressing** | Decorated like the shipping and receiving area of a warehouse<br>Center of the room has a ring of terminals that have been themed to look as though they're made of clockwork mechanisms<br>Large loading bay door (non-functional) |
| **Special Effects** | Terminals have LED that light up the associated color of the pendant |

**Scene 3 – Portal Room**

The breakroom is now the portal to The Nexus. On the far wall is an art nouveau inspired gate. The rounded corners of the room break apart, revealing bits of The Nexus breaking through to our reality (projection).

Table 13. The Nexus, Scene 3 - Portal Room

| 3 – Portal Room | The Nexus Scope Document |
|---|---|
| **Animated Figures** | n/a |
| **Animated Props** | n/a |
| **Artificial Foliage** | n/a |
| **Audio Hardware** | Speakers in ceiling to give ambient noise, 5.1 surround as sound will be circling around guests during the transformation |
| **Graphics/Signage** | n/a |
| **Interactives** | Docent instructs guests to focus their energy from their pendants to help open the portal (not recorded) |
| **Landscape/Hardscape** | Ornate barrier around the gate, should look as though it was industrial shelving that has reformed into an art nouveau inspired gate |
| **Media** | 2x corner projections: art direct so it looks like corporate office with cracks into the Nexus in the shape of filigree<br>Gate activation sequence: energy radiates from The Nexus and flows through the gate and around the room (where projection is)<br>Guide animation: use existing animations to rig guests' guide. Incorporate guides into the gate activation |

| 3 – Portal Room | The Nexus Scope Document |
|---|---|
| **Personalization** | Pendants glow and buzz to coordinate with gate<br>Guides “fly out” of the guests’ pendants and incorporate into the animation |
| **Projection Equipment** | 5x projectors, one on each corner, one on portal |
| **Scenic Paint** | Blacklight painting on floor, filigree pattern<br>Gate: patina copper, wrought iron, painted background with subtle variation |
| **Show Action Equipment** | Gate: retracting scrim, safety barrier |
| **Show Control Systems** | Sync to global attraction network for adaptive event timing |
| **Show Lighting** | 5x Projectors<br>Lighting to be designed by lighting designer to achieve an otherworldly glow emanating from portal, but still bright enough elsewhere for safety |
| **Show Props & Dressing** | Gate<br>Safety barrier installed around perimeter of room, thematic |
| **Special Effects** | Gate opening sequence – Projected animation on gate, projections on each corner, LED lighting within gate to make energy glow reveal |

**Scene 4 – Inventor's Fair**

Inventions from around the multiverse blend the line between science, art, and magic. Guests can explore the space until called to next scene.

Table 14. The Nexus, Scene 4 - Inventor's Fair

| 4 – Inventor's Fair | The Nexus Scope Document |
|---|---|
| **Animated Figures** | Clockwork creature – 6 axes of motion: head pivot, hips/shoulders |
| **Animated Props** | Fractal sculpture (media-enhanced)<br>Tornado sculpture<br>Motion wall sculpture<br>Cloudstone interactive<br>6x Baubles<br>20x miscellaneous moving sculptural props |
| **Artificial Foliage** | 10x alien looking plants to be placed in examination jars |
| **Audio Hardware** | Ambient sound<br>20x small speakers to be placed near props that play triggered sound effects |
| **Graphics/Signage** | 30x scientific brass labels |
| **Interactives** | Center sphere – main piece, can be spun freely by guests to control the overhead space projection. When aligned with the primary star, it triggers a fly through the solar system ending on the star. Focus to be pulled from other interactives to this<br>Cloudstone – stone that has liquid sublayer that's visible and can be flipped to show movement within<br>Baubles – Glow the color of the guest's pendant when activated<br>Informational kiosks – Encyclopedia of alien creatures, plants, tools, etc<br>Clockwork Creature – Can be piloted by guest |

| 4 – Inventor's Fair | The Nexus Scope Document |
|---|---|
| **Landscape/Hardscape** | Orrery surround with columns framing central sphere |
| **Media** | Solar system interactive general<br>Solar system, zoom in animation<br>Clockwork creature design<br>Motion wall projection<br>Informational kiosk UX/UI |
| **Personalization** | Guides appear at guest activation of medallions<br>Interactives adjust environment based on guest behavior |
| **Projection Equipment** | Ceiling projection on ceiling, connected to gyroscope interactive |
| **Scenic Paint** | Items should be painted to make them feel practical, yet beautiful like you might see in a Jules Verne inspired piece |
| **Show Action Equipment** | Orrery: large overhead rings rotate to match guest interaction with center sphere |
| **Show Control Systems** | Sync to global attraction network for adaptive event timing |
| **Show Lighting** | Spotlights on props and key interactive elements<br>Glow from overhead stars as ambient focus<br>Lighting conveys grandeur and scale |
| **Show Props & Dressing** | A seemingly endless collection of props, miscellaneous props to be pulled from engineering tools that are also aesthetically pleasing and sculptures that look like they could be scientific |
| **Special Effects** | Solar system fly-through triggered when center sphere aligns with primary star |

**Scene 5 – Alien Forest**

Guests explore an otherworldly forest that holds beauty and danger in equal measure.

Table 15. The Nexus, Scene 5 - Alien Forest

| 5 – Alien Forest | The Nexus Scope Document |
|---|---|
| **Animated Figures** | 5x Wood sprites<br>8x glowing eyes, slight rotational movement |
| **Animated Props** | 5x animated plants<br>Blooming flowers interactive wall |
| **Artificial Foliage** | 20x “hero” level plants<br>30x exotic plants, five copies of 6 types<br>70% scenic coverage, off-the-shelf faux foliage |
| **Audio Hardware** | Background music coverage<br>8x small speaker for glowing eyes<br>2x large LED interactive audio coverage |
| **Graphics/Signage** | 6x Informational signage for exotic plants |
| **Interactives** | Blooming flowers<br>6x Guide check-in, exotic plants<br>2x Large LED screens for wood sprites/creatures/spiritual interactions with motion control |
| **Landscape/Hardscape** | Alien forest landscape – look to tropical rainforests for reference, 70% total foliage coverage<br>Rock work – 3x exotic boulders, 1x2x2m rocks to create path barrier |
| **Personalization** | Forest Clearings – projections<br>Blooming flowers interactive<br>LED interactive 1 & 2<br>Guide check-in, exotic plants, LED interactives<br>Wind SFX<br>A/V/L – change to appropriate theme |

| 5 – Alien Forest | The Nexus Scope Document |
|---|---|
| **Projection Equipment** | Projection on blooming flowers interactive<br>Projection on each forest clearing |
| **Scenic Paint** | Black light paint on foliage<br>Paint to make foliage look more alien<br>Paint rock work to have alien moss |
| **Show Action Equipment** | n/a |
| **Show Control Systems** | Sync to global attraction network for adaptive event timing |
| **Show Lighting** | Change hue and brightness based on personalized theme<br>Light – Golden hour on an alien planet, warm colors<br>Dark – Ominous yet beautiful, dark and cool colors |
| **Show Props & Dressing** | Fill out scenic to make this feel more like a living and breathing forest – animals and plants are living in harmony, but there's chaotic beauty |
| **Special Effects** | Wind effects for dark or dramatic scenes<br>Reactive lighting and sound integrated with interactive elements |

**Scene 6 – Heart of the Nexus**

Just before their journey to the edge of reality, guests explore the heart of The Nexus. Here, they can discuss their profiles with their guides and make changes to ensure the perfect adventure.

Table 16. The Nexus, Scene 6 - Heart of The Nexus

| 6 – Heart of the Nexus | The Nexus Scope Document |
|---|---|
| **Animated Figures** | n/a |
| **Animated Props** | Hanging crystal balls – rise and fall to create waves |
| **Artificial Foliage** | n/a |
| **Audio Hardware** | Ambient background music coverage<br>Transformation effect – Additional speakers around exit |
| **Graphics/Signage** | n/a |
| **Interactives** | Hanging crystal ball interaction: balls respond to guest movement to create wave effects<br>Guide interaction at terminals to confirm adventure theme, intensity, and connections with other guides |
| **Landscape/Hardscape** | n/a |
| **Media** | 8x Back wall animation<br>8x Door animation<br>24x Interactive screen animation |
| **Personalization** | 8x effects depending on ending – forest, crystals, underwater, space, technology, reversing time, library, disaster |

| 6 – Heart of the Nexus | The Nexus Scope Document |
|---|---|
| **Projection Equipment** | Exit door projections<br>3x spotlights with gobos producing leaves, caustics, nebula, grid, dots, brick |
| **Scenic Paint** | Visual elements incorporate aspects of all potential endings |
| **Show Action Equipment** | Astrolabe – rotates as room transforms |
| **Show Control Systems** | Sync to global attraction network for adaptive event timing |
| **Show Lighting** | Projection and screens<br>4x spotlights targeting astrolabe floor, ceiling, and shelving<br>Interior projected floor crystals |
| **Show Props & Dressing** | Items from all previous scenes and all possible endings made to look chaotic, but coherent |
| **Special Effects** | n/a |

**Scene 7 – Motion Ride**

Guests board a vehicle that takes them to the edge of The Nexus, creating a permanent mark on the dimension and are encouraged to bring that creative spirit back with them to our world.

Table 17. The Nexus, Scene 7 - Motion Ride

| 7 – Motion Ride | The Nexus Scope Document |
|---|---|
| **Animated Figures** | n/a |
| **Animated Props** | n/a |
| **Artificial Foliage** | n/a |
| **Audio Hardware** | 6x - 5.1 surround, separate system for each pod<br>Ambient music coverage |
| **Graphics/Signage** | Safety/operational signage<br>6x – ride pod graphic to make them individualized |
| **Interactives** | Physical: Return tube for guests to deposit their pendants. Needs to have RFID scanner to synchronize ending |
| **Landscape/Hardscape** | Concrete with art nouveau style flooring and walls engraved |
| **Media** | 6x Finale animation<br>6x* Various additional assets that further personalize finales |
| **Personalization** | 6x Finale animation<br>6x* Motion ride programming with variable intensity<br>6x* Special effects |

| 7 – Motion Ride | The Nexus Scope Document |
|---|---|
| **Projection Equipment** | 6x Motion ride vehicle screens<br>6x Motion ride exterior door |
| **Scenic Paint** | Incorporate assets from all endings into the scenic |
| **Show Action Equipment** | 6x Motion rides |
| **Show Control Systems** | Sync to global attraction network for adaptive event timing |
| **Show Lighting** | Dim in general with doors highlighted |
| **Show Props & Dressing** | 6x Motion ride doors that incorporate all endings, build pendant return container |
| **Special Effects** | 6x Motion rides<br>12x Air cannons<br>12x Vibrating seat<br>12x Fans |

**Scene 8 – Retail**

Guests cross through the portal once again, back to our world. The loading bay has continued to grow more beautiful since they left. All the boring packages are works of art that they can bring home with them. They can even get a recording of their adventure to share with friends.

Table 18. The Nexus, Scene 8 - Retail

| 8 – Retail | The Nexus Scope Document |
|---|---|
| **Animated Figures** | n/a |
| **Animated Props** | n/a |
| **Artificial Foliage** | Scattered exotic foliage in corporate pots |
| **Audio Hardware** | Ambient soundtrack |
| **Graphics/Signage** | Retail marketing signage, MSRP labels<br>Operational and directional signage<br>Modified corporate posters redone in art nouveau style<br>Posters and graphics from the attraction available for purchase |
| **Interactives** | n/a |
| **Landscape/Hardscape** | n/a |
| **Media** | n/a |

| 8 – Retail | The Nexus Scope Document |
|---|---|
| **Personalization** | n/a |
| **Projection Equipment** | n/a |
| **Scenic Paint** | Use colors typical in corporate offices to paint intricate whiplash and other art nouveau patterns |
| **Show Action Equipment** | n/a |
| **Show Control Systems** | Sync to global attraction network for adaptive event timing |
| **Show Lighting** | Retail lighting |
| **Show Props & Dressing** | Retail shelving should be like corporate office furniture but modified to be more artistic and expressive. If possible, modify until barely recognizable |
| **Special Effects** | n/a |

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