

The background is a deep purple space filled with white stars of varying sizes. Large, abstract, wavy shapes in shades of blue and purple float in the background. On the right side, a large, glowing blue planet with a textured surface is partially visible. A white treble clef and several musical notes are positioned as if they are orbiting the planet along a white curved line.

COSMIC CHORDS

COMPOSE & COMMUNICATE

Authors

Vera Scheve 1576216
Puck Verbeek 1575589
Emma Elisma 1443445

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TU/e EINDHOVEN
UNIVERSITY OF
TECHNOLOGY

Coach

Isolde Hallensleben

Challenge Owner

Jack Smale

content



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Introduction

Introducing the project and relevance

Concerts are immersive experiences that captivate audiences with live performances, but there's often a period of waiting once venue doors open. During this time, visitors typically wander around, store belongings, buy merchandise, grab food and drinks, or simply pass the time. While practical, these activities can feel like filler rather than an integral part of the event. Recognizing this, AFAS Live, a major concert venue in the Netherlands, issued a unique challenge: design an AI-powered pre-show experience that engages and entertains visitors, transforming their wait into an enjoyable, memorable part of the concert experience.

This challenge involves understanding visitor behaviours, exploring what might attract and engage people before a show, and devising an experience that can be effectively scaled. Central questions emerged around understanding audience desires, identifying interactive elements that invite participation, and designing for a high-volume venue. In response, three students from the Department of Industrial Design at Eindhoven University of Technology developed an innovative, interactive booth that blends playfulness with technology and personalization. This project was undertaken as part of the university's Innovation Space Project: Innovation Through Art & Design course, which encourages students to practice the creative methodologies of art in innovations, thus avoiding a problem-based approach and allowing the creative mind to flow freely.

The result is the 'Cosmic Chords' booth. This booth is an immersive experience, allowing you to travel to another universe in 5 minutes. Based on the notion of music as a universal language, you are invited to communicate with entities in outer space by discovering the cosmic chords. Through a tactile experience of touching, stroking, and pressing extraterrestrial objects, sounds are composed, to which the entities may respond with a festive climax where the entities make themselves visible and invite you to dance.

The project is led by three students, each bringing unique skills and perspectives rooted in industrial design. Together, their diverse interests, skillset and aspirations informed key design decisions and fuelled the creative process. The following chapter introduces each team member, shedding light on the backgrounds and design perspectives. By exploring the project's foundations and the collaborative journey, we aim to provide insight into the thought process behind the Cosmic Chords booth and its potential to enhance the concert-going experience at AFAS Live.



The Team

Introducing the team members

Emma Eisma

Industrial Design

Competencies

- Design Thinking
- Marketing & Business
- Graphic & Visual Design
- Organising
- Photography
- Team player, Enthusiastic, Relaxed & Problem Solving

Goals

- Becoming a more curious and brave designer
- Learning more about experience design
- Learning physical prototyping methods: soldering, using tools and woodworking
- Ask help from others

Vera Scheve

Industrial Design

Competencies

- Design for playful learning (e.g., collaborative & visual sense-making, kinesthetic learning)
- Design Thinking (iterative processes, creative thinking)
- UX Design
- Graphic design (e.g., illustrations & visual storytelling)
- Planning & structure facilitation (e.g., Miro)
- Low-fidelity prototyping (e.g., laser cutting & foamboard modeling)
- Being Loyal, Detail-oriented, and Ambitious

Goals

- Mitigating the pitfalls of democratic leadership (e.g., communicating expectations more clearly).
- Enhancing digital quick illustration skills, to improve my communicative sketches for sharing ideas within a team and with stakeholders. In specific, finding a personal sketching style that works for quick and efficient illustrations.
- Balancing decision-making with open-mindedness and out-of-the box ideas: how to stay open-minded in a design process, and trust the process and the unknown?



Puck Verbeek

Industrial Design

Competencies

- Critical & creative thinking
- Empathizing & understanding user
- Rapid prototyping
- Planning & documenting design process
- Enthusiastic and ambitious problem solver

Goals

- Improve physical prototyping skills, especially the structure of bigger artefacts.
- Work with new machines & techniques I haven't used before, like woodworking, tufting.
- Develop technical skills & become more confident in programming & electronics.

Figure 1: The Team (Left to right: Emma, Puck, Vera).



Analysis

Theoretical background knowledge

Exploring the venue

AFAS Live, located in Amsterdam, is one of the Netherlands' most popular concert venues (AFAS Live, n.d.). The venue attracts a wide range of audiences for live performances, from international pop and rock acts to electronic music events and cultural showcases. As a major entertainment space, AFAS Live continuously seeks to enhance its visitor experience, ensuring time spent before and after concerts remains engaging and memorable.

Currently, AFAS Live hosts a "Shout-out Booth" sponsored by Samsung (Samsung Newsroom, n.d.), which invites visitors to "make some noise!" Using their voice, visitors can activate the booth to take a photo and enter for a chance to win prizes such as Samsung Galaxy Buds2 Pro or a VIP ticket upgrade. The booth is a fully enclosed space where attendees can participate at any point during their visit. However, due to limited engagement and other concerns, AFAS Live is now seeking a more interactive and appealing replacement to enhance the visitor experience.

Key take-aways from existing pre-show experiences

Concert and event venues around the world are increasingly incorporating interactive booths to enhance the visitor experience and make waiting times more enjoyable.

These installations often serve dual purposes: providing entertainment and promoting brands. Examples include Spotify's Listening Lounge (The Listening Lounge, 2023), where visitors can discover new artists and personalise playlists, and Coca-Cola's Photo Experience booths (Full Frame Events, 2023), which allow attendees to take themed photos and share them instantly on social media, often coupled with a branded takeaway. These experiences are designed to entertain, engage, and build excitement before the main event, while also helping brands connect with audiences in an interactive and memorable way.

Concert venues and music festivals both utilize interactive booths to enhance visitor experience, though the types of booths at each often differ in focus and design. At concert venues, booths typically offer quick, self-contained experiences that fit within a shorter timeframe and enclosed space. For example, American Express Card Member Lounges (American Express, n.d.) at venues like Madison Square Garden provide exclusive perks, such as free food samples and priority seating, creating a premium experience for cardholders in a limited area. Similarly, Samsung's Shout-Out Booth (Samsung Newsroom, n.d.) allows visitors to engage with technology and win prizes through brief, fun activities, enhancing brand interaction without requiring extensive space or time. Concert venue booths often aim to entertain and engage visitors with simple, interactive moments that can be completed within minutes.

In contrast, music festival booths are often larger, more immersive installations designed to create memorable, multi-sensory experiences that attendees can revisit over a full day or weekend. For instance, Heineken's House at Coachella (Coachella Valley Music and Arts Festival, n.d.) features a music lounge with interactive light shows, photo booths, and themed products, fostering a social space that festivalgoers can explore at leisure. Red Bull's Silent Discos (Instagram, 2021) invite participants to dance with wireless headphones in a silent but communal environment, creating an unexpected, group-centred activity. Meanwhile, Intel's virtual concert experience, featuring Diplo, (Intel: Drop In, 2020) gives fans a unique chance to virtually attend live performances with audience-reactive technology.

Both types of booths meet the needs of their respective settings: concert venue booths maximize engagement in compact spaces, while festival booths invite deeper exploration and social interaction. By understanding these dynamics, we can identify what types of pre-show experiences are most likely to captivate concertgoers, creating an opportunity to enhance the waiting period before the main event with a memorable, interactive installation

Understanding the atmosphere and incentives: reasons for attending physical concerts

Concerts are more than just auditory experiences; they are immersive events that fulfil social, emotional, and communal needs. Studies indicate that audiences are drawn to concerts not solely for aesthetics enjoyment but also for the chance to connect and socialize with like-minded fans. Research highlights several primary motivations for concert attendance:

1. Social and communal connections

Concert attendance is deeply tied to social interaction, as many people view live events as opportunities for community building. Frequent concertgoers often seek experiences where they can connect with others, enhancing both the collective enjoyment of the music and communal aspect of the experience (Dearn & Price, 2016).

2. The flow experience and memory impact

Engaging in activities that enhance the concert's ambiance and interactions, such as skill performances, personal resonance (self-congruence), and interactions with passionate fans, contributes to a flow experience. This state of immersion positively impacts memories of the event and increases the likelihood to return. Interactive installations can support this by providing touch-points that add value to the pre-show experience, enhancing mood and engagement (Ding & Hung, 2021).

3. The desire for unique and novel experiences

Live music events offer an irreplaceable sense of presence, what researchers call the "be-there" factor. Concertgoers value the opportunity to experience something unique and novel in a live setting, connecting with the performance and the crowd in a way that recorded media cannot replicate (Brown & Knox, 2016).

Principles for experience design

Experience plays a key role in creating impactful experiences for visitors of entertainment settings, like concerts and music festivals. By creating pre-show interactions, organizers can transform passive and boring waiting time into a more special and memorable part of the overall event.

As Berridge (2007) mentions in his article the design of the experience can fundamentally change the overall experience of a person. Meaning that a well-designed pre-show experience can elevate the visitor's journey from the moment they arrive. This not only enhances the core performance but also builds anticipation and sets the mood for the show. The experience economy, as discussed by Pine and Gilmore (2013), highlights that such personalised, immersive moments can create lasting impressions, adding value beyond the concert itself.

Another important aspect is that waiting in general can affect the mood and overall perception of an event (Norman, 2008). While an engaging activity can reduce frustration and make waiting time feel shorter. This was also confirmed by the research of Larson (1987) who wrote that when visitors feel engaged, they are more satisfied, even during wait times. Creating an experience that can be done during this waiting time, can thus help with the mood of visitors and the overall experience.

To make that experience special it can be interesting to incorporate multisensory and embodied interaction elements to immerse visitors in tactile, sensory experiences. This can make the waiting period a more personal experience (Dourish, 2001).

In summary, experience design in entertainment settings is about more than just the main event it is about creating a complete journey from the moment you buy tickets until the end of your visit. Incorporating good experience design in the pre-show experience can enhance a visitor's satisfaction, minimize frustration, and leave a lasting positive impact.

The power of AI in engaging and immersive interactions

AI-powered interactive installations have become increasingly popular and are used to

enhance user engagement in public venues. There are various possibilities with AI, such as capturing motion, image and face recognition, etc. Capturing motion has been widely studied for its potential to create immersive full-body interactions. Research demonstrates how real-time movement tracking can enhance engagement by cherishing a physical connection during a digital experience (Wang, Cao, & Tanaka, 2021). This approach could be effective in concert pre-shows, where dynamic movement can enhance anticipation and excitement.

Image recognition could contribute to personalization as it can adapt digital content based on user appearance. Through the recognition and reflection of individual traits, image-based personalization in AI-driven art can improve user satisfaction (Chan, Ma, & Xu, 2022). This technique allows the creation of a unique and personalized digital environment, resonating with each user and fostering a sense of personal connection.

The use of face recognition is a lot more complex, as one must deal with privacy rules and consent. However, it allows recognition of returning visitors (Liu & Shum, 2021). Experiences could be adjusted based on user preferences, building loyalty, and enhancing the user experience. Overall, this aspect of personalized adjustments will increase the user satisfaction.



Voice recognition and natural language processing allow for interactive dialogues between humans and AI. This could make the installation more accessible and engaging. Research shows how conversational AI encourages exploration, enhances interactivity, and promotes user immersion (Kim, Zhao, & Wang, 2023). The integration of artist-based interactions aligns with these findings, providing meaningful engagement between the visitor and 'artist' in a social setting.

Generative Art for sparking curiosity and personalization

Generative art has grown as a tool for creating personalized, interactive experiences. It can offer creative control of the visitors, fostering a unique user connection to the digital installation.

The AI can generate real-time visuals based on auditory or written feedback (Elgammal, Liu, & Song, 2021). Research emphasizes the satisfaction that users derive from contributing to an authentic, one-of-a-kind creation, while generating art (McCormack, Gifford, & Hutchings, 2019). Visitors composing their own digital artwork or song aligns with this concept, as it allows participants to feel a sense of authorship and personal engagement. Creating dynamic content, allows interaction between visitors and between visitor and the AI. Transforming the pre-show experience into an interactive personalized experience makes it a more memorable and active part of the whole concert experience.

Elements that encourage exploration can captivate users and sustain engagement, as it fosters curiosity. Though research targets younger users, their findings on curiosity-driven interaction have broader implications (Tieben, Bekker, & Schouten, 2011). Applying the principles the five principles of evoking curiosity - novelty, partial exposure, complexity, uncertainty, and conflict - can stimulate visitors to experiment with the

booth. This can be done by engaging them in a process of discovery and by making them active participants in their pre-show journey. The insights underscore the importance of personalization, interactivity, and curiosity in designing installations. By not only capturing attention but also inviting visitors to explore their curiosity.

Taking the experience home: the value of physical memorabilia

Memorabilia can have significant value for visitors, as they can act as tangible sentimental reminders of the concert. Research suggests that memorabilia help individuals revisit meaningful moments, providing a sense of nostalgia extending beyond the event itself (Lovett & Perdue, 2020). Physical souvenirs can serve as reminders that help maintaining a personal connection to the concert. They can also reinforce positive memories associated with the artist's performance (Swanson & Timothy, 2012). Souvenirs can also play a social role, enabling visitors to share their experiences with others through display and storytelling.

Traditional concert merchandizing often includes clothes, posters, and programs. These items are not only cherished for their aesthetic or collectible qualities. They are also cherished for their potential to elicit memories and evoke emotions associated with the event (Klein & Becker, 2020). Studies on consumer behaviour reveal that merchandizing is particularly effective in enhancing personal identity and social affiliation, as fans can use it to demonstrate their association with the artist or event (Mead, O'Connor, & Yu, 2011). Displaying and wearing these items fosters a sense of belonging within fan communities as fans can convey their affinity with the artist to others.

In recent years, the rise of digital memorabilia has opened new possibilities for personalized, interactive souvenirs. Digital souvenirs are particularly appealing for their adaptability,

as they allow fans to store or share these experiences easily (Kelleher & O'Dell, 2015). These digital souvenirs can also be dynamic, like animated visuals or personalized artworks. This provides fans with a “living” memory of the concert that keeps engaging over time. However, physical memorabilia highlight advantages, while physical items are often perceived as more personal. For fans, a tangible link to the artist or event goes beyond a digital realm (Swanson & Timothy, 2012). Physical souvenirs also offer sensory engagement. They can be touched, worn, or displayed, which enhances their emotional value and makes them long-lasting artifacts of the concert experience.



Prototyping & Technological Development

The process of ideation and reflection

Finding overlapping interests through moodboards

In addition to doing background research to establish a foundation for the project, we kicked off with making mood boards.

Each team member collected pictures online of things that sparked our personal interest or were fitting for this project. As a result, pictures were collected of a wide range of activities, certain forms of interaction, and aesthetic designs of booths. Afterwards, all collected pictures were categorized with keywords, forming the starting point of analysing the mood boards collectively. As a result, we quickly realised that there were strong shared interests regarding the following topics: Creative, **Souvenir**, Interactive, Playful and Experience. It created a common interest and a starting point to use during further ideation.

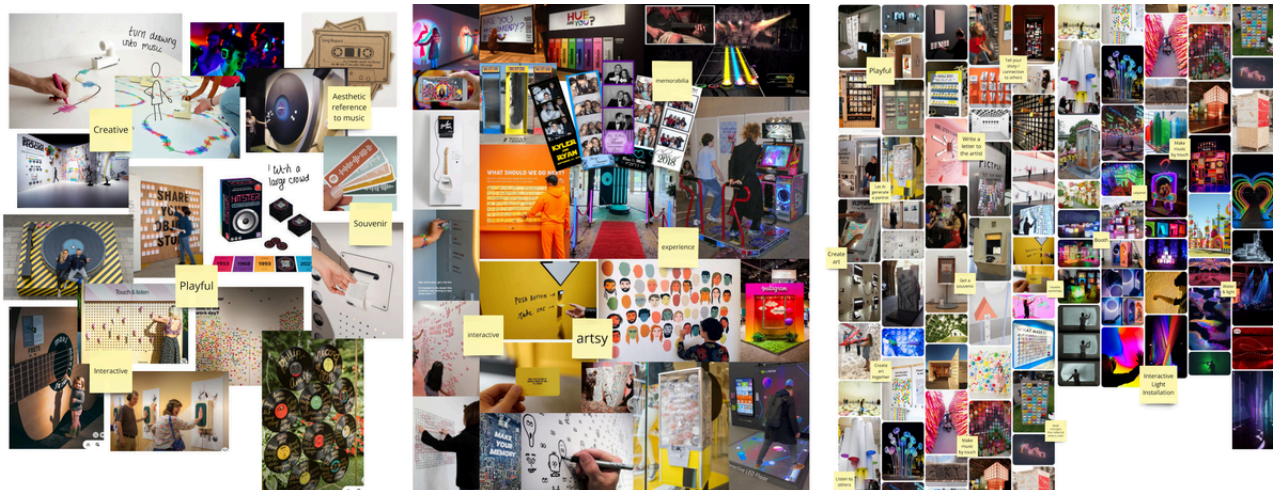


Figure 2: Individual Moodboards.

Souvenir

Random word brainstorm: from 'laser' to the concept of exchanging something with fellow concert visitors

As a kick-off of the project for the open-minded generation of ideas, we did a brainstorm with 10 words on the topic of 'entertainment', generated randomly by

ChatGPT. A wide variety of words were generated, such as choreography, laser, acoustics and crowd surfing. In response, we all took 20 minutes to individually note down any thoughts or ideas that emerged in response to each of the generated words.

Afterwards, the findings were discussed which led to an interesting discussion, where additional ideas were sparked by building upon each other's thoughts. This has ultimately sparked a first area of interest: the act of creating something for and receiving

something from fellow concert visitors. This emerged from the word laser, which sparked the concept of a spotlight, and in turn 'putting someone in the spotlight'. Appealing to all of us, this direction was taken as a foundation for further ideation.



Figure 3: Outcome random word brainstorm.

Immersing ourselves in the user experience: visiting AFAS Live

A key activity in the process was visiting AFAS Live. This enabled to explore the site and define the context of our design case. The exploration began with the exterior of the building, acknowledging that the visitor

experience initiates from the moment they queue outside. While the large screens on the building's facade presented an interesting opportunity for displaying content, this concept was dismissed due to the challenges of creating weather- and vandal-resistant designs.

Upon entering the venue, various spaces were identified and categorized:

- **Entrance & Merchandise Area:** A highly dynamic and crowded space where visitors are task-oriented, minimizing opportunities for engagement.
- **Locker Area:** Similarly task-oriented, with minimal wandering or exploration by visitors.
- **Food & Drink Stands:** Spaces where visitors tend to linger, providing opportunities for engagement.
- **Chill Area** (First Floor): A relaxed environment conducive to exploration.
- **Talent Stage** (First Floor): An additional area with interactive potential.
- **Samsung Booth:** A focal point for experiential design.

The Samsung Booth served as a key area of analysis during the venue visit due to its centrality and relevance to the design objectives. Positioned in a highly visible location, every visitor passes by the booth, which ensures high foot traffic but also

creates a potential barrier to engagement due to crowding. This spatial dynamic may discourage visitors from entering the booth, an observation supported by the booth's closed-off design, which lacks an inviting atmosphere. The primary interactive feature of the booth requires visitors to generate a specified level of decibels—typically by screaming loudly—to unlock a photo opportunity. Experiencing this firsthand revealed that the activity can feel awkward and uncomfortable, as it exposes participants to the gaze and attention of onlookers. This insight highlighted the importance of designing a more inclusive and comfortable user experience in future iterations.

Additional observations included the booth's overhead signage, featuring its name and purpose, is effective and inviting, the booth's size is optimal for the available space, though it necessitates careful consideration of layout and flow, and the experience duration should ideally not exceed five minutes to maintain visitor engagement.



Figure 4: AFAS Live visit insights.

Also, the site visit provided valuable insights for the refinement of our target audience. The intended audience comprises primarily younger visitors who are enthusiastic about engaging with new and memorable experiences, though they may not be the most devoted fans of the event. These individuals are typically those who explore the venue's offerings before proceeding to the concert hall.

This activity highlighted the need to design an experience that balances visibility, accessibility, and engagement while fostering a sense of comfort and inclusivity for visitors.

Sparking a personal exchange between visitors: what would you like to share?

Intrigued by the concept of exchanging input with another person to receive an unexpected output in return, we began brainstorming different forms of input that would be meaningful and engaging. Initially, we explored a wide range of input types, including written text, audio messages, video clips, and visual art, each with distinct qualities and potential for self-expression.

For each type of input, we discussed the specific content possibilities it might enable. For instance, written text could facilitate the sharing of personal insights, such as describing a favourite song or memory, while a video message might allow for a more dynamic and playful exchange, such as showcasing unique dance moves.

As we evaluated these options, we considered both the nature of interaction and the type of experience we wanted to create. Through reflection and discussion, we identified that certain types of input—particularly written or hand-drawn—offered a more tactile and interactive quality. Unlike digital media, these forms could provide a physical, personalized souvenir, adding a layer of intimacy and tangibility to the experience. This tactile aspect resonated with our goal of creating something participants could truly “hold onto” as a memory of the interaction.

To refine our approach, we also sought feedback from individuals outside the project, gathering fresh perspectives on what types of input felt most engaging and memorable. This external input helped us recognize the broader appeal of written and drawn contributions, especially for their ability to serve as lasting, tangible reminders of the interaction. As a result, we developed a preference for these formats, viewing them as the most effective means to foster a deeply interactive and personally resonant exchange.

Inspiring the shape: what already exists?

We conducted a benchmark to explore existing practices and products that centre around the idea of exchanging something with a stranger, and this revealed a variety of fascinating traditions and innovations. Traditional examples include sending messages in bottles, geocaching, and the custom of attaching notes to balloons to let them travel to unknown locations, where they might be discovered by a stranger. These practices emphasize a shared sense of curiosity and wonder about the unknown, highlighting the human intrigue surrounding anonymous exchanges and the thrill of connecting across distances.

Our research also uncovered more contemporary and inventive products and installations that take this concept further. For instance, *Distributeurs des lettres d'amour*, a project by a French artist, allows people to receive a love letter from a stranger in exchange for a small fee, adding an element of mystery and sentimentality to the interaction (*Art, Des Distributeurs de Lettres D'amour Pour La St Valentin, 2018*). Another notable example is *Art-o-mat* (*Art-o-Mat®, n.d.*), a series of vending machines repurposed from old cigarette dispensers, which distribute small pieces of art instead of cigarettes. These installations provide a tangible and accessible way for people to engage with art and personal expression in unexpected spaces.

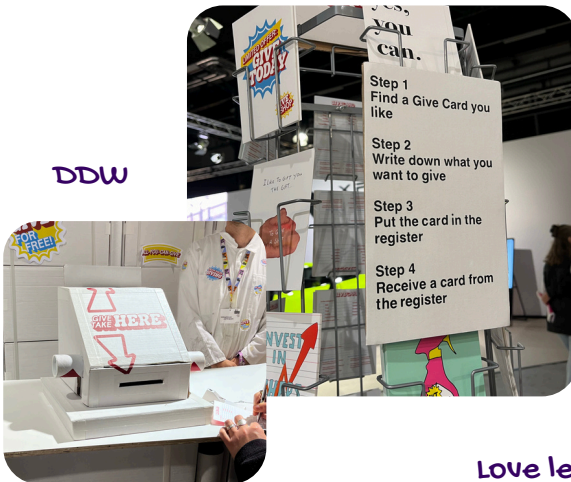
Message in
bottle



Geocache



DDW



Love letter
dispenser

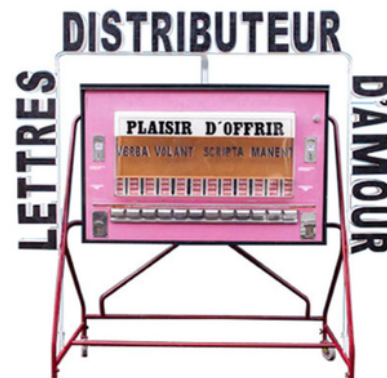


Figure 5: The Art-o-mat and Distributeurs des lettres d'amour (Art-o-Mat®, n.d.) (Art, Des Distributeurs de Lettres D'amour Pour La St Valentin, 2018).

In addition to physical exchanges, we discovered digital platforms that facilitate anonymous sharing, such as the Digital Museum of Secrets (*Digital Museum Of Secrets, n.d.*). This online project curates exhibitions of anonymously submitted secrets, shared in the form of digital postcards, allowing participants to share deeply personal reflections without revealing their identities.

These diverse examples, both traditional and contemporary, inspired us to consider a broad range of possibilities for bringing our concept to life.

We gained insight into how the physicality of the exchange—whether in the form of a letter, artwork, or physical token—creates a unique and memorable experience, adding depth and value to the interaction. At the same time, digital formats offer new avenues for anonymous expression, providing a sense of connection without physical proximity. Reflecting on these benchmarks helped us understand that the format we choose will significantly shape the experience, guiding us to think deeply about how we want participants to feel and what they will ultimately take away from the interaction.

Visiting Doloris: Inspiring an immersive and out-of-the-box experience

In an attempt to think more out-of-the-box, we visited the Doloris museum. The Doloris Anoma Maze is an immersive art museum located in Utrecht, the Netherlands (Doloris, 2024). It is known for its unique, interactive art experience, primarily featuring the “Anoma Maze,” a surreal labyrinth-like maze designed by a team of international artists. In the Meta Maze, visitors explore a series of over 70 rooms filled with surreal, fantastical installations and optical illusions. The experience is designed to be highly sensory and immersive, encouraging visitors to get lost in the maze and interact with the art pieces as they move from one otherworldly room to the next. The goal of Doloris is to provide a space where visitors can experience art in a playful and exploratory way, blurring the lines between reality and imagination. Unique to Doloris, visitors must experience the maze individually, and the use of phones or watches is prohibited, maintaining an air of mystery and enhancing immersion by disconnecting them from the outside world.

Reflecting on our experience, we began to analyze what makes this mysterious environment so appealing. We recognized that the enforced mystery—stepping into an unknown, unshared experience—piques visitors’ curiosity and builds a strong “fear of missing out” (FOMO) effect, since only by experiencing it firsthand can one truly understand it.

This sense of mystery became a compelling takeaway for our project, prompting us to consider how we might incorporate an element of the unknown into our concept to spark curiosity and engagement.

Another key insight was the impact of interactivity within the Anoma Maze. Although most of the rooms were designed to be visually immersive, only one room offered genuine interactivity, and this room captivated us the most. This reinforced the appeal and importance of incorporating interactive elements within our concept, validating that engagement through interaction can deepen the experience and create memorable moments.

In summary, our visit to Doloris inspired us to add two critical elements to our project criteria: **mystery** and **interactivity**. The combination of these elements has the potential to evoke curiosity and invite participants to fully immerse themselves, just as we did in the maze.

mysterious

interactive

Physicalizing ideas: a touch of humour is key

After activities that provided inspiration and helped specify the context, we moved to ideation through a structured brainstorming session. This allowed us to translate the diverse concepts gathered over time into more concrete and actionable ideas. To kick off the session, a brainstorming challenge was set where each team member sketched 20 ideas within an hour. While the limited timeframe left little room for detailed consideration of each idea, it encouraged creative freedom and spontaneity under time pressure. By the end of the session, 60 sketches had been produced. The sketches were then analysed for recurring themes and overlaps, and the most intriguing concepts were selected for further exploration.

The most promising ideas—those aligning with key project goals—were brought to life through quick prototyping using materials like cardboard, paper, and foam board. This hands-on approach not only made abstract ideas tangible but also sparked new concepts that had not been initially considered.

For example, one prototype involved "catching a duck", introducing an element of surprise to the interaction.

Another key concept was the "cow", where visitors would feed the cow with their input and receive contributions from other visitors by interacting with the cow's back. Initially, there was concern that such a quirky and unconventional idea might be too uncomfortable or absurd for users. However, peer feedback was overwhelmingly positive, demonstrating that incorporating humour and playfulness into the experience could significantly enhance engagement.

From this session, it became clear that humour and fun should play a central role in the final design. These elements not only make the experience memorable but also create a welcoming and enjoyable atmosphere for visitors. The combination of rapid brainstorming and prototyping proved to be an effective method for refining ideas and exploring new creative directions.

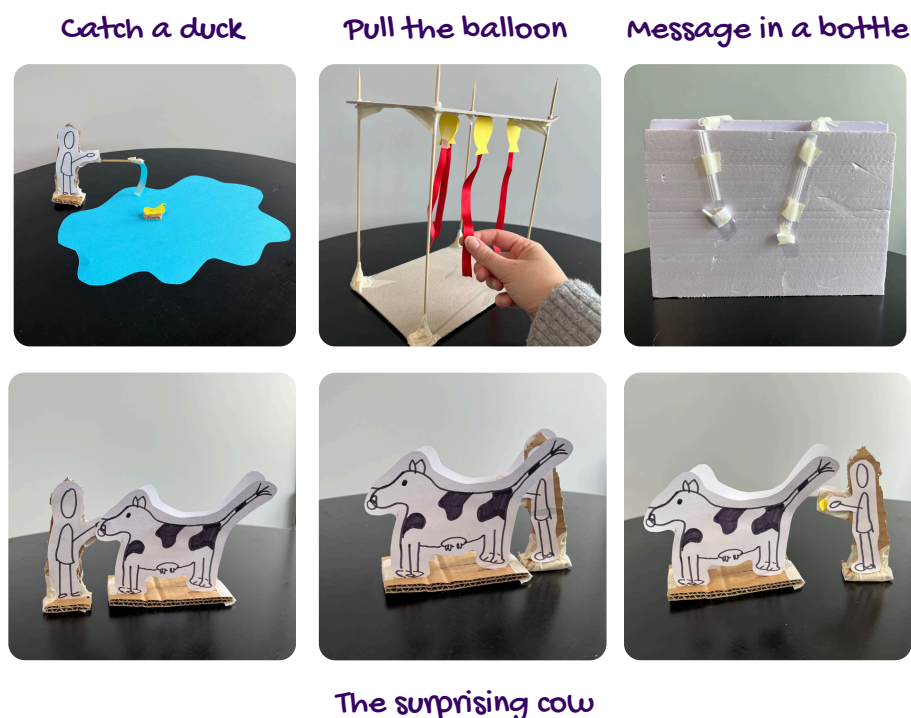


Figure 6: Prototypes from the physical brainstorming exercise.

**Applying humour to the booths theme:
Music-related sayings**

To delve deeper into the role of **humour** in the design, we decided to explore Dutch idioms and sayings related to music. These phrases provided a culturally resonant and thematic foundation for the project. Several sayings stood out during this exploration:

- **"Een vrolijke noot"** – Translated as "A happy note," this phrase conveys a cheerful and positive tone.
- **"Altijd hetzelfde liedje"** – Meaning "Always the same song," this expression carries a more negative connotation, suggesting monotony or frustration.

- **"Een gevoelige snaar raken"** – Literally "Striking a sensitive nerve," this saying refers to evoking deep emotions, often in a melancholic or serious context.

While the latter two sayings had intriguing implications, their associations with sadness and negativity made them less fitting for the lighthearted and humorous experience we aimed to create. Ultimately, "Een vrolijke noot" was chosen as the conceptual focus due to its joyful and upbeat nature.



music

humour

Midterm Concept

The midterm pre-show experience

Concepts

During the midterm, two concepts were presented with the Nutcracker. One concept focuses on receiving your own souvenir and the other concept focuses on receiving a souvenir from a stranger.

Concept 1: *Receiving your own souvenir*

This concept centered on personalization, allowing visitors to create their own unique musical experience. The booth featured a

market stand filled with "nuts," each symbolizing a specific element of a song, such as a genre or instrument. Visitors were invited to select nuts according to their preferences and feed them to the nutcracker. Once inserted, the nutcracker cracked the nuts and began to produce a melody tailored to the visitor's choices. At the end of the experience, a compartment opened to reveal a leaflet summarizing the chosen nuts, accompanied by a QR code to access the generated song later. This concept emphasized creativity, experimentation, and the personalization of musical compositions.

Concept 2: *Receiving a souvenir from a stranger*

This concept focused on fostering connection among visitors through shared song

Figure 7: Involving the challenge owner for demonstrating the midterm concept.



recommendations. Participants wrote their favorite song on a piece of paper and placed it inside a nut, which was then inserted into the nutcracker. Once the nut was cracked, the nutcracker presented a new nut containing a song recommendation left by another visitor. This approach encouraged interaction and a sense of shared musical discovery.

Feedback

Both concepts were well-received by the challenge owner and peers, though Concept 1 received stronger support. It was noted that the first concept offered greater visitor interaction and a clear link between input and output, making it more engaging. In contrast, Concept 2 lacked a strong connection between the input (a personal song recommendation) and the output (a recommendation from a stranger), which could result in mismatched musical tastes. Suggestions included integrating AI to bridge this gap by combining recommendations into a new, collaborative song.

The potential for sponsorship was also highlighted. For example, partnering with Duyvis could introduce a practical element, such as providing visitors with a bag of nuts at the end of the experience. This idea added a tangible commercial aspect that had not been considered previously.

Exploring realization and commercial aspects

Following the presentation, the team refined the concept, addressing practical challenges, ethical considerations, and technical feasibility:

- **Safety and Practicality:** Real nuts were initially envisioned for the booth but were perceived unsafe due to potential allergies. Loose, fake nuts were also impractical, as they could create clutter and raise logistical issues within the AFAS Live venue.
- **Business Opportunities:** Discussions with the challenge owner explored potential

collaborations with Duyvis. A proposal was made to offer small bags of Duyvis nuts as part of the booth experience, enhancing the sponsor's visibility while providing visitors with a memorable takeaway.

- **Personalization and Ethical Considerations:** AI-based personalization was investigated by consulting with an AI expert, Arthur Hallensleben. The idea of using artists' music for AI-generated songs raised ethical and copyright concerns, as well as potential resistance from fans while altering the original work of their beloved artists. Instead, it was determined that the AI would base its compositions on abstract parameters such as (1) genre, (2) mood, and (3) instrument selection, aligning with existing Music AI models.

The revised concept incorporated these insights into a practical and engaging experience. Multiple iterations were made, starting with a largely digitalized interface to be altered to resemble the original physical interaction as demonstrated during the midterm presentation as close as possible, while this physicality resonated most with us. Also, attention was paid to incorporating feedback and feedforward to streamline the intuitiveness of the interaction. As a result, four themed baskets were introduced: genre, mood, and two instrument baskets, each containing five buttons. Visitors could select one option from each basket and press the "CRACK!" button to send their input to the nutcracker. Upon receiving the input, the nutcracker's screen displayed an animated transformation of the chosen elements into a song. The generated song is played for the visitors, accompanied by a QR code to access it later.

This iteration successfully balanced creativity, interaction, and technical feasibility while addressing practical and ethical concerns. It also provided a clearer connection between visitor input and the generated output, enhancing the overall experience.



Figure 8: A sketch of the developed midterm concept.



Back to the Drawing Board

Taking a step back to explore

Going back to exploring

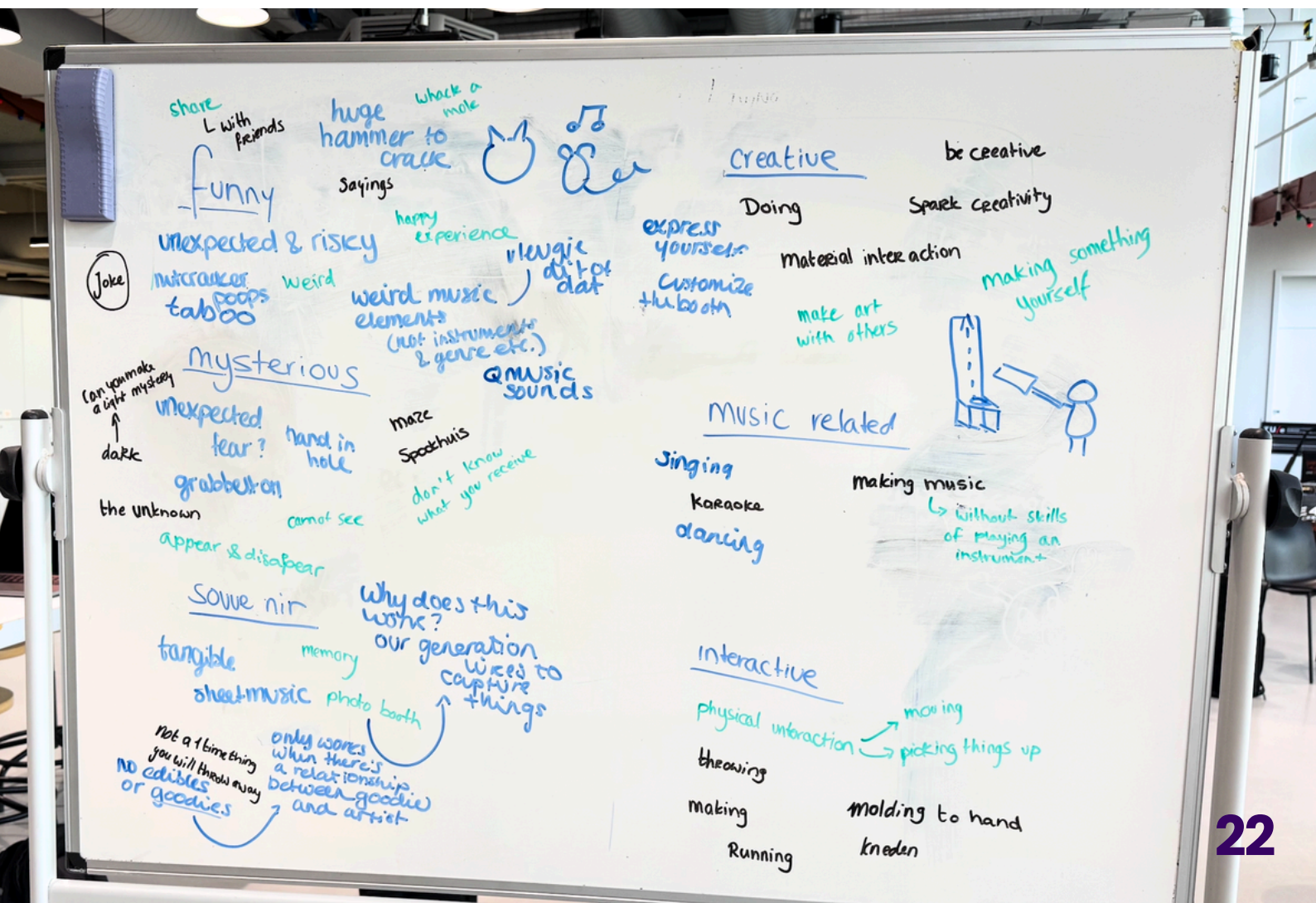
While the Nutcracker concept was initially perceived a suitable response to the design case and its constraints, we collectively agreed that its originality and potential could be pushed further. To achieve this, we decided to temporarily let go of the constraints and revisit the keywords: funny, mysterious, souvenir, music-related, interactive, and creative. This approach allowed us to explore these elements to their extremes and generate new, innovative ideas.

We began by individually brainstorming ways to enhance each keyword, adopting a similar

method to our earlier random-word brainstorming exercise. During our collaborative discussions, we identified physical interaction as a key element, alongside mystery and humor, both of which we felt were underexplored in the Nutcracker concept.

Additionally, we emphasized the importance of participants being able to create something themselves, fostering a sense of personalization and active engagement. While souvenirs were acknowledged as meaningful artifacts tied to the experience, providing opportunities for personalization, we agreed they should have intrinsic value—something participants would want to keep rather than throw away. However, since the personalization concept was already well-integrated into the experience itself, we decided not to prioritize the souvenir in further ideation.

Figure 9: Keyword brainstorm.



To further guide our ideation, we defined three music-related questions and answered them individually:

1. What is music for you?
2. Why do you go to a concert?
3. What does making music mean to you?

The responses revealed shared themes. For instance, music serves as a powerful form of emotional expression. Concerts are opportunities to have fun with friends while sharing the experience with strangers, fostering a sense of collective connection. Furthermore, music-making should be accessible to all, regardless of prior knowledge or skill. These insights highlighted the idea that our concept should emphasize inclusivity and creativity, encouraging participants to engage with music in a playful, accessible, and unexpected way.

Building on these reflections, we brainstormed themes that could embody the unexpected (mystery) and humor, such as a kitchen, farm, or shower. These unconventional settings demonstrated how music could be made from everyday or unexpected objects, sparking curiosity and encouraging interaction. However, the theme of outer space emerged as the most compelling direction. Its inherent mystery and limitless creativity provided a perfect metaphor for music as a universal language, used to communicate with entities in outer space.

This new theme allowed us to reimagine the user experience as a playful journey into the unknown. Participants would interact with otherworldly instruments, each designed to produce unique sounds, evoking a sense of wonder and discovery. The experience would build up to a festive climax, where visitors connect with the “alien entities” they had been communicating with, celebrating through music. This theme captured the humor, mystery, and creativity we sought, while also ensuring the experience was interactive and memorable.

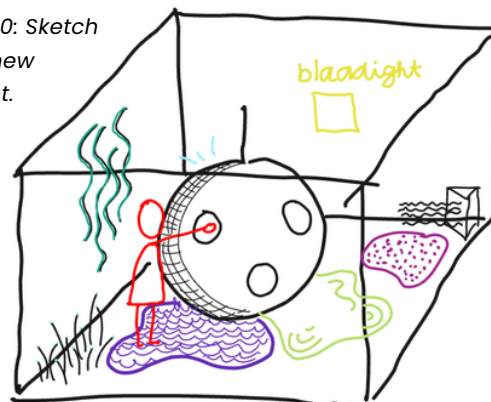
Exploring Sounds

With the outer space theme, we began exploring ways to combine materials and interactions with sound. Our goal was to create an immersive and playful experience that would bring people in outer space yet be intuitive. To start, we gathered a variety of materials like fur, sand, balls, and grass. Each material was chosen for its unique texture and potential to evoke specific gestures, such as stroking, pushing, grabbing, or stepping. These natural interactions inspired us to think about how participants might engage with the installation. From this process, we identified eight distinct elements that would form the core of our design.

Next, we focused on the sounds these elements might produce. We imagined what music might sound like in another universe, reinterpreting familiar musical elements in alien forms. Each interaction was mapped to a musical function, such as pressing a soft surface creating a deep bass sound, and stepping on tiles producing melodic tones, with each step adding to a cosmic melody.

This approach allowed us to combine physical interactions with imaginative soundscapes, enhancing the outer-space theme. The result was a playful, exploratory experience where participants could discover how ordinary materials could produce extraordinary sounds. Through this exploration, we laid the foundation for a unique, interactive installation that brings the mystery and wonder of outer space to life.

Figure 10: Sketch of the new concept.





The image features a man in a dark sweater and glasses, kneeling and reaching towards a large, circular arrangement of glowing spheres on the floor. The spheres are in shades of blue and yellow, with some being brighter than others. Above the man, several translucent plastic bags are suspended in the air, illuminated from within by warm, orange-yellow lights. Three white musical notes (a treble clef, a quarter note, and an eighth note) are floating in the upper right area, connected by thin white lines. The overall atmosphere is dark and artistic, with a focus on light and sound.

cosmic CHORDS

Cosmic Chords

The final pre-show experience

The final design, titled *Cosmic Chords*, invites visitors to embark on a journey to another planet, blending music, interaction, and imagination. Strategically located near the food and drink stands at AFAS Live, the booth leverages the universal language of music to create a unique and tactile experience. Visitors are encouraged to interact with a range of extraterrestrial objects, each designed to produce distinct sounds—known as the "cosmic chords." The more sounds visitors generate, the more responsive the alien entities become, building up to a celebratory moment where the entities reveal themselves and invite visitors to join a dance-filled finale.

To create a rich sensory and interactive environment, the booth incorporates eight distinct objects, each paired with its own soundscape:

- **Pressing Pods:** Round, pressable elements that respond to touch with bass tones.
- **Stationary Fur:** A soft, textured pillar that reacts to stroking or pressing with harmonizing tones.
- **Ball Pit:** Immersive and playful, producing lower twinkling sounds as balls are moved or displaced.
- **Sandbox:** A tactile element where visitors can move sand to generate maraca-like noises.
- **Lianas:** Hanging elements that chime when swayed or pulled.
- **Crater:** A hole filled with cotton and small marbles that emits higher twinkling sounds.
- **Stepping Stones:** Activated by stepping, these stones produce melodic xylophone-like tones.
- **The Festive Climax:** The highlight of the booth, where blacklight transforms the environment, revealing glowing planetary features and the eyes of alien entities watching from the sides. This immersive climax invites visitors to dance and celebrate.

Figure 11: Visitors interacting with the final installation.





Figure 12: Visitors interacting with the final installation & Aurora poster.

Each element was individually lit within the booth's darkened space, drawing visitors' attention, and enhancing the overall sense of mystery and exploration. In addition, a five-speaker surround sound system was created throughout the booth, enabling an immersive audio experience. These speakers, spread throughout the space, were strategically mapped to the eight elements, with sounds triggered by the interactions of visitors. While a Wizard of Oz approach was implemented for the final presentation, this relied on three "wizards" who monitored visitor actions from a hidden position and manually triggered sound effects. This setup allowed for precise, real-time responses to visitor engagement.

While the final presentation was not at the actual AFAS Live site, several choices were made to enhance the immersiveness of the experience. For instance, concert tickets were designed, printed, and distributed to visitors

before entering the presentation venue, giving the impression that visitors would be attending the concert of the Norwegian singer Aurora, whom we visited earlier in the project at AFAS Live. Similarly, concert posters, corresponding with the tickets were hung around the venue. Also, smaller details like a 'main stage' door label near the Cosmic Chords booth, and real food and drink availability arranged in collaboration with the course coach, added to the overall experience.

To implement the Cosmic Chords booth as a standalone, vandal-proof installation without relying on a Wizard of Oz approach, several technical solutions would be required. Interaction detection could be achieved by incorporating sensors tailored to each element's unique features. For instance, touch-sensitive components could be embedded in the pressing pods and

stationary fur, while pressure plates could activate the stepping stones. Motion or proximity sensors would work well for elements like the lianas and ball pit, while infrared or capacitive touch sensors could monitor interactions with the sandbox and crater.

A central control system, such as a microcontroller or computer (e.g., Raspberry Pi or Arduino), would manage the soundscapes, triggering them automatically based on the data received from the sensors. To ensure durability, all interactive elements could be constructed from reinforced materials such as tempered glass, high-density foam, or anti-vandal coatings, protecting them from potential damage.

For additional security, all critical components, such as sensors and wiring

could be housed within locked enclosures to prevent tampering. Maintenance and monitoring could be facilitated through a remote tracking system, which would allow real-time performance checks and alert operators to any malfunctions.

Lastly, the immersive audio experience could be realized through a multi-channel surround sound system, programmed to distribute pre-recorded soundscapes across the space. Preferably, each element would have its own speaker, enhancing detail in the mapping of sound on location to enhance the interaction feedback. This system would ensure the audio environment remains synchronized with the visitors' interactions, delivering an independent, and vandal-resistant experience at crowded venues like AFAS Live.

Figure 13: Visitors interacting with the final installation & Aurora ticket.



Conclusion

Reflecting on the project

This semester's project offered an exciting opportunity to address a unique challenge set by AFAS Live: designing an AI-powered pre-show experience to transform the waiting period before concerts into an engaging and memorable part of the event. Concertgoers often fill this time with practical but unremarkable activities like storing belongings, purchasing merchandise, or grabbing food and drinks. Recognizing this gap, we aimed to create a solution that would captivate visitors while aligning with the immersive nature of concerts.

Our journey began with the **Nutcracker** concept, a practical design focused on meeting client requirements and operational feasibility. This project demonstrated a structured approach to problem-solving, emphasizing efficiency and functionality. However, encouraged to push creative boundaries, we revisited the challenge with a fresh perspective. This led to the development of **Cosmic Chords**, a concept rooted in the notion of music as a universal language.

Cosmic Chords offers an imaginative, playful experience where visitors interact with extraterrestrial objects to produce cosmic sounds. The installation transforms ordinary materials into tactile, sound-generating elements, encouraging participation and discovery. By blending sound, interaction, and personalization, the concept creates an inclusive and accessible experience that resonates with diverse audiences, aligning with AFAS Live's vision for dynamic pre-show engagement.

The dual outcomes of this process—the **Nutcracker** and **Cosmic Chords**—provide an example of how design challenges can inspire both practical and out-of-the-box solutions. The Nutcracker represents a functional approach that aligns with venue requirements, while Cosmic Chords explores the creative, experiential potential of the challenge. Together, these concepts illustrate the spectrum of possibilities available to AFAS Live, inspiring the venue to consider both operational practicality and innovative opportunities when enhancing the concert-going experience. As a result, this project met the challenge's five criteria (Mysterious, Funny, Interactive, Music-related, Souvenir) more effectively through the combined outcomes, reaffirming the value of creative exploration in enhancing large-scale public events.

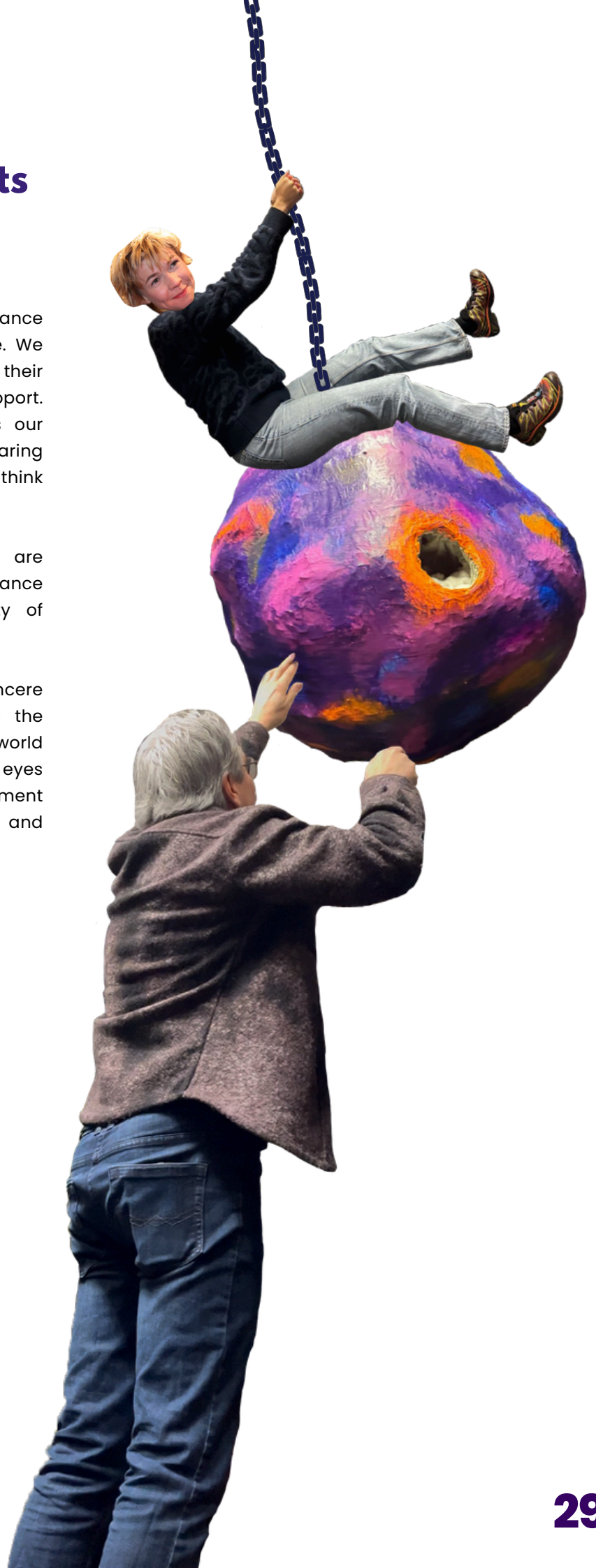
Acknowledgements

Thanking the people who helped us

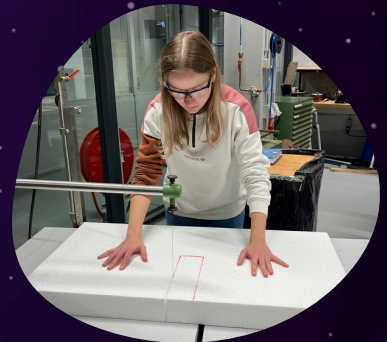
We would like to thank Isolde for her guidance and enthusiasm throughout this course. We also wish to thank Ari and our peers for their constructive feedback and support. Additionally, we would like to express our gratitude to Groovido and Elke for sharing their expertise and encouraging us to think beyond traditional design perspectives.

During the final assembly phase, we are especially grateful to Edwin for his assistance in ensuring the assembly and safety of Cosmic Chords.

Lastly, we would like to express our sincere thanks to Jack for providing us with the opportunity to engage in this real-world challenge. His support has opened our eyes to the possibilities within the entertainment industry, the realization of ideas, and collaborations.



Behind the scenes



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