AR for Music Venues

Research Report
‘Next Stage AR’
July 2025

Thunderboom · VNPF · Superposition · Melkweg · Paradiso · Amsterdamse Bos Theater · Cultuur Loket Digitall

Next Stage AR is a collaboration between:
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Intro

The rapid advancement of digital technologies is reshaping the global live music industry, offering new ways to engage audiences and redefine the cultural role of live events. Within this evolving landscape, Augmented Reality (AR) has emerged as a particularly promising innovation.

Instead of replacing your surroundings like Virtual Reality (VR) does, AR enhances what you already see. It works through devices like smartphones, which use a camera to recognize your environment and overlay visuals, animations, or information on top of it. In the context of live music, that could mean digital effects floating above a stage, interactive posters that come to life when you scan them, or digital timetable audiences can explore on their phones.

The key feature of AR is that it blends the physical and the digital in real time. This makes it a potentially powerful tool for concerts, where the energy of the room is everything, but there's also room to surprise, inform, or creatively extend the moment.

Globally, major players have already embraced AR. From Live Nation's exclusive partnership with Snapchat, to the Gorillaz's AR collaborations with Google, and the use of Meta's AR tech at Coachella, these innovations are setting new standards in live entertainment. Younger audiences in particular are responding enthusiastically, as seen in the popularity of AR filters on social media and the growing presence of virtual avatars in music performances by artists like The Weeknd and K-pop groups.

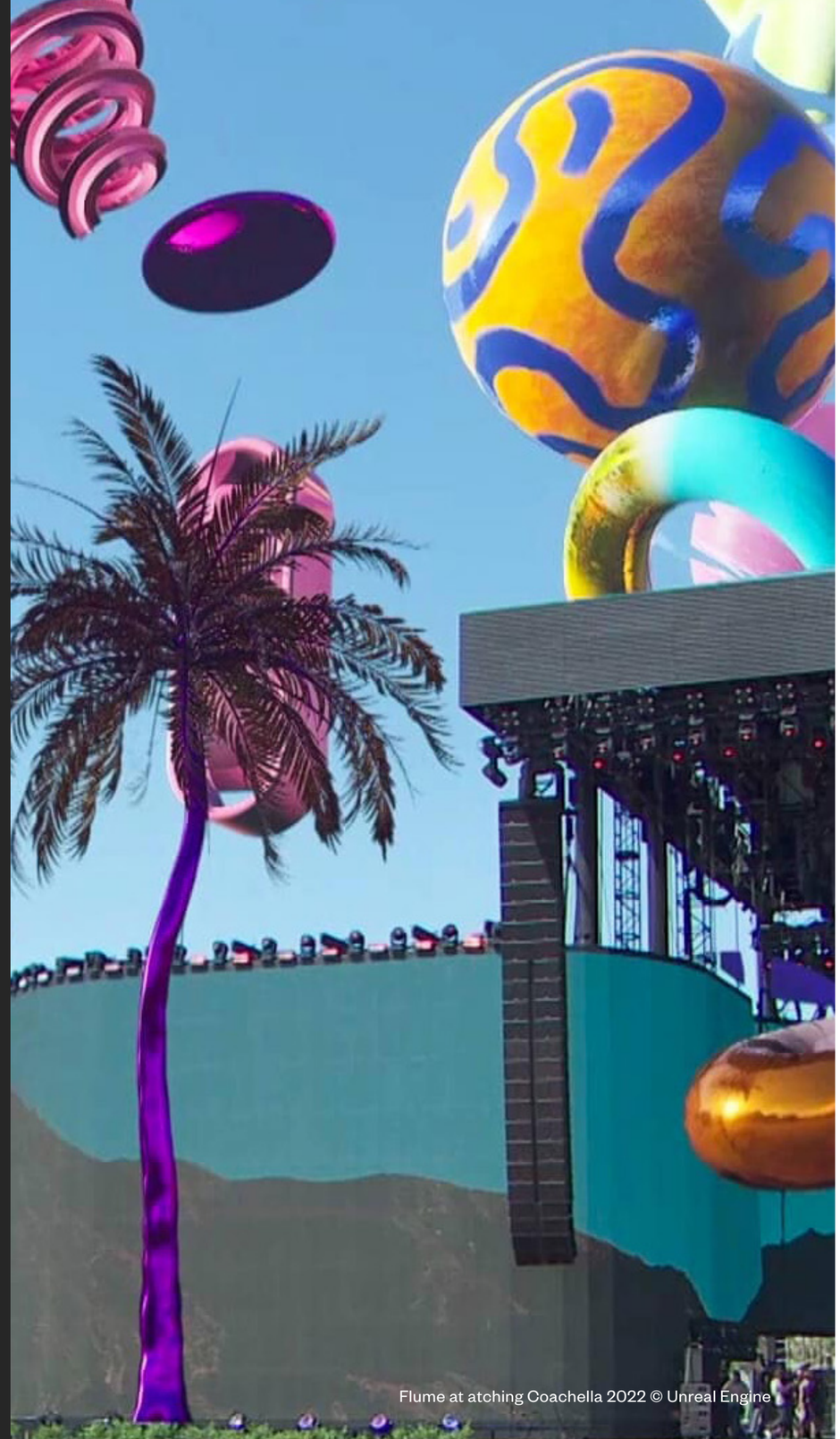
Gorillaz at London's Piccadilly Circus © Google

But, these high-profile developments raise an important question: who gets to participate in this digital future? In the Netherlands, many music venues and festivals face significant structural and financial limitations that hinder experimentation with emerging technologies. Without accessible tools, shared knowledge, and sector-wide support, the risk is a growing technological divide in which only a select few benefit from the creative and economic potential of AR.

This challenge forms the starting point of the **Next Stage AR** project. Next Stage AR explores how mobile AR can be made accessible and meaningful not only for the largest Dutch stages, but for small and mid-sized venues and festivals across the country. Working in collaboration with partners including Paradiso, Melkweg, and the Amsterdamse Bostheater, the project has developed and tested a low-threshold AR tool in real-world concert settings.

Through these experiments, we aim to understand what AR can truly offer to live shows, how audiences and artists respond to it, what technical and organizational challenges arise, and how to develop a tool that works across the entire Dutch pop sector. In doing so, Next Stage AR seeks to ensure that innovation in live music remains inclusive, collaborative, and creatively driven.

The economic resilience of the sector will be increased when venues and festivals have more knowledge about the possibilities of emerging technology and are enabled to experiment with low-threshold interactive and immersive applications themselves. In this way, they can create innovative concert experiences, thereby appealing to a new or larger audience and applying new revenue models.



Flume at atching Coachella 2022 © Unreal Engine

Project Setup

To strengthen the Dutch music sector amid ongoing digital transformation, it is essential to acquire hands-on knowledge, share insights across the industry, and create user-friendly tools grounded in public values.

To achieve this, the Next Stage AR project has brought together an extensive network of innovation experts, tech companies, venues, and stakeholder groups to jointly explore the potential of AR. This research has taken the form, from round table conversations and interviews, to practice-based experiments in which AR was tested in various real-life situations.

The aim was not only to explore technical possibilities but also to investigate workflows, audience experiences, and economic potential. We are well aware that many venues face capacity challenges – both in terms of staffing and finances –so the pilots were designed to be low-threshold, diverse, and accessible.

In-depth Research

New technology only becomes valuable when it is embraced by the people who are meant to use it. That's why we considered it crucial to involve venue staff, artists, and audiences in the Next Stage AR project.

To gain a deeper understanding of how mobile augmented reality (AR) is received and experienced by the various stakeholders, the project employed a multi-layered approach.

On this page you will find a list of the different research methods used. The findings from our research are described in the following chapter.

Roundtable (RT)
Next Stage AR began by sending out invitations to staff from various music venues around the Netherlands, resulting in the formation of a roundtable group of 15–20 music industry professionals. Throughout the project, this group convened at several key moments to reflect on the project's findings.

Audience observations (AO)
In-situ observations conducted during four live events, focusing on audience interaction with the AR experience. These included body language, engagement levels, phone use behavior, and social dynamics during and after interaction with the tool.

On-site interviews (OI)
Short, recorded interviews with 15 audience members during and immediately after the events. These interviews captured first impressions, usability challenges, emotional reactions, and any social discomfort or excitement.

Audience survey (AS)
An online survey completed by 30 respondents who attended the events. The survey included both scaled and open-ended questions to evaluate satisfaction, perceived value of the AR tool, and how it shaped the overall event experience.

Semi-structured interviews (SI)
Conducted with 3 artists and 6 venue staff members after the performances. These longer, more reflective interviews focused on required skills, potential resistance, and how AR might reshape audience experiences and creative practices.

Team-based evaluation (TE)
A reflective, internal analysis from the team, drawing on own experiences as designers and music industry professionals to assess what worked, what didn't, and how the technology could evolve in future settings.

9 Case Studies

To explore the potential of AR, the Next Stage AR project team developed nine use cases in collaboration with the partnering music venues. During these use cases, AR was tested in a variety of real-life situations.

Each of the nine test cases involved a unique application and deployment of the AR tool and was evaluated through site-specific research.

On this page you will find an overview of the nine case studies, including the date, venue, artist, AR application, and the research methods used for each. The findings from these test studies are presented in the following chapter.

Between August 2024 and August 2025, the Next Stage AR project carried out nine test cases in collaboration with Paradiso, Melkweg, and Bostheater Amsterdam. Below is an overview of the test cases and the corresponding research methods used.

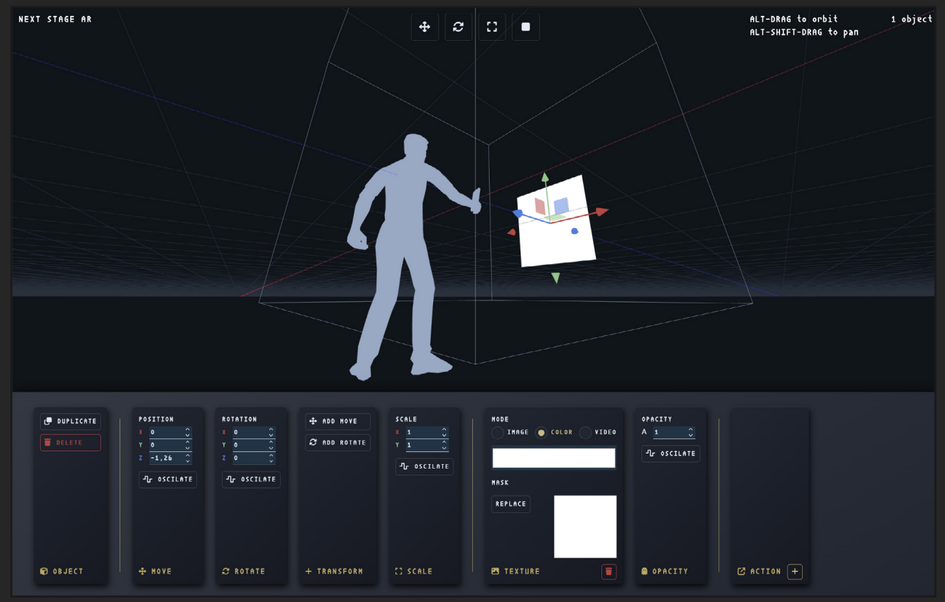
Venue	Event	Date	Type of AR experience	Research method
Paradiso	Cafe Vanguard	15-08-2024	An artist-driven AR performance where AR layers were developed for two of the performing artists to use during their live performances.	TE, AO, AS, TE
Paradiso	Tones	May 2025	Interactive digital program, available for audiences prior to the event, through QR codes that were printed on posters around town.	TE
Paradiso	The Next Gen	06-07-2025	Business cards with an AR experience with information on all 15 performers and their details were handed out to the audience.	TE, AO
Melkweg	Hightea	25-10-2024	AR utility for audience navigation.	TE
Melkweg	Oyster	15-02-2025	AR based time schedules and touring.	TE, AO, OI
Melkweg	Yaro Mila	11-04-2025	Business cards handed out with a QR code with visual enhancement of the live performance through the deployment of several creative AR layers. These were executed at stages, starting before the show, and then took place on four occasions during the show.	TE, AO, OI, AS
Bostheater	Zeevlinder & Bosfest	30-08-2024	AR embedded in nature-based performances.	TE
Bostheater	AR Walk	28-08-2024 / 07-09-2024	Multiple AR experiences in a walk through the forest.	TE
Bostheater	40 years Bostheater	Summer 2025	Location-based storytelling experience about the history of the theatre.	TE

Custom AR Tool

Currently, there are several AR tools on the market that can be used within the context of music venues. Platforms like Snapchat, Google, and Unity each offer their own technologies.

However, these tools are not built on public values and often pose barriers in terms of privacy, copyright, and user-friendliness.

For this reason, the Next Stage AR project has focused on developing a custom AR tool, tailored specifically to the needs of the Dutch live music sector.



Our custom AR tool, developed during the Next Stage AR project, builds on software originally created for another Thunderboom initiative: Open Culture Tech. That project focused on developing open-source software to help music artists design augmented reality experiences for their live shows.

An important part of the Next Stage AR project was to take this AR technology and further develop it to meet the specific needs of Dutch music venues. We did this by collecting feedback from various stakeholders after case study events and incorporating that feedback into the next iteration of the tool wherever possible.

At its core, the goal of the original ARSynth tool was twofold: to make AR easy to design and easy to view on a mobile phone.

This principle has remained unchanged. In practice, this means ARSynth is not expensive or complex software that requires downloading, everything runs directly in the browser. The creation tool, which allows users to build their own AR experiences, is easy to operate from a desktop web browser. No special equipment is needed to create AR scenes. Audiences can access the AR experience simply by scanning a QR code with their smartphones. The AR content opens instantly on their device, no app required.

Based on extensive testing and feedback from shows at Paradiso, Melkweg, and the Bostheater, we introduced a range of new features. All improvements were made through an iterative process, using the Double Diamond (design method)model of discovery, development, and continuous testing. The result is a lightweight, accessible, and engaging AR tool that is easy to use, but remains powerful enough for professional creators. Whether you're a musician, designer, or marketer, you can easily add an interactive AR layer to any live show — without needing a technical team or expensive equipment.

On the technical development side, ARSynth is built using the SvelteKit framework and Three.js, both for the AR desktop creative tool and the mobile AR Android viewer. The iOS viewer was built in Swift. The backend uses Supabase. The interface design (UI) was inspired by the logic of modular synthesizers: you can just start playing. Turn knobs, push buttons, tweak parameters, and things happen. This encourages experimentation and creativity, even for users without a technical background.

Some of the added features

- The ability to set the origin point of an AR experience (e.g., near a QR code or poster).
- Creative animation tools such as oscillator waveforms (sine, square, triangle, sawtooth, noise), phasing, and opacity control.
- Hyperlinks embedded in AR objects—for promotions, artist info, or merchandise.
- Support for short video playback within AR.
- A redesigned viewer interface with progress bars, jump-in buttons, and smoother navigation.
- Screen recording with support for external microphone audio, enabling users to document and share their AR experience directly.

Research Results

In this chapter, we present the results of the Next Stage AR project. By combining data from surveys, observations, and interviews, we aimed to gain as complete a picture as possible of the different dimensions of the project, from concept to execution.

The results are structured across four sections, each highlighting a different phase of the project. We begin with Round Table Insights, which captures the expectations, concerns, and perspectives of venue staff before the pilot phase. These early reflections served as a valuable reference point for evaluating the outcomes of the test cases.

Next, in (Pre-) Production Findings, we shift to the backstage process. This section explores how the AR tool was used by artists, designers, and technical staff, and examines the production-related challenges and opportunities that arose throughout the development and implementation of the tool.

We then move to Evaluating the Outcomes, where we assess how the AR experiences were received in practice. This includes audience engagement during the live events, usability in real-world conditions, and general reception from the public.

Finally, in Looking Towards the Future, we reflect on the broader implications of AR in the cultural sector. Drawing on everything we learned during the project, we offer conclusions and recommendations for the continued development and use of AR in live music settings.

1.0 Round Table Findings

Before the test cases began, we invited staff from various Dutch pop venues to roundtable discussions to gather their opinions on AR technology.

Although most had limited hands-on experience, they were generally open to its use. The Netherlands is seen as a leader in adopting new tech, and many venues consider AR a natural next step, provided it's accessible and easy to implement.

On this page you will find a summary of their key challenges and recommendations they foresee for AR adoption. These recommendations were used in pilot studies as seen in test cases in the table above.

1.1 Challenges

Organizational & Technical Concerns
- Who "owns" AR? Production, marketing, external?
- Venue teams may lack time or skills.
- Smaller venues lack resources for tech adoption.

Financial & Logistical Barriers
- Smaller venues lack budget, rely on volunteers.
- Would need interns or external help to manage AR.

Risk of Gimmickry
- Fear AR might lose impact through repetition.
- Creative renewal is hard to sustain without available staff.

Audience-Related Concerns
- Younger and tech-savvy audiences are more likely to engage.
- Older or genre-specific crowds may resist phone use.
- Risk of disrupting the concert (distraction, chatter).
- Reliance on smartphones may exclude some users.

Legal & Ethical Questions
- Artist contracts may limit AR use (e.g., image rights, copyright)
- Need to consider IP and international artists unfamiliar with AR norms.

1.2 Opportunities

	Before show	During show	After show
Creative Expression AR as part of artistic and creative output of the event.	• Creative filters • Virtual stage previews • Immersive storytelling • Artistic branding	• Stage design • Immersive storytelling • Audience interaction	• Recaps with AR highlights
Marketing AR to promote the event, create branded content or build hype.	• Promotion • Exclusive content	• Event branding • Exclusive content	• Exclusive content
Audience Services AR used to support audience logistics and experience.	• Wayfinding • Information provision	• Wayfinding • Information provision	• Wayfinding • Information provision

2.0 (Pre-) Production Findings

This section presents the outcomes of interviews focused on the preparation processes for the use cases. We spoke with artists, their representatives, and venue staff including promoters, marketing, and production team members.

For each use case, the AR tool was employed with a different goal in mind. We aimed to understand the internal workflows and how the tool was integrated and used within the various teams.

By examining these different test situations, we gathered diverse insights into the preparation and implementation of AR in live music settings.

2.1 Ownership: who creates the experience?

Within the production process, it proved important to have someone involved with experience in visual design. This could be an in-house marketer, technician, or an external graphic designer or video artist. Specific experience with virtual, 3D, or AR environments was not required — our custom AR tool successfully lowered that barrier, making the technology accessible to a broad range of creators. In some cases, music artists designed their own AR experiences; in many others, the task was delegated to another creative member of their team.

> *"What I've really noticed is that the moment you tell this story, some people immediately start seeing possibilities and unleash a wave of creativity. They come up with endless ideas and really want to dive into it."*
> – Venue promoter

The test cases showed that venues do have the capacity to implement AR in-house, especially when there is clear internal ownership and some level of visual design experience. In practice, it proved helpful to bring in external designers to support the process, particularly during busy periods or when specific expertise was needed. This approach aligns with how venues already collaborate with freelancers for marketing campaigns, stage design, or visual communication, and can help ease pressure on internal teams without creating dependency.

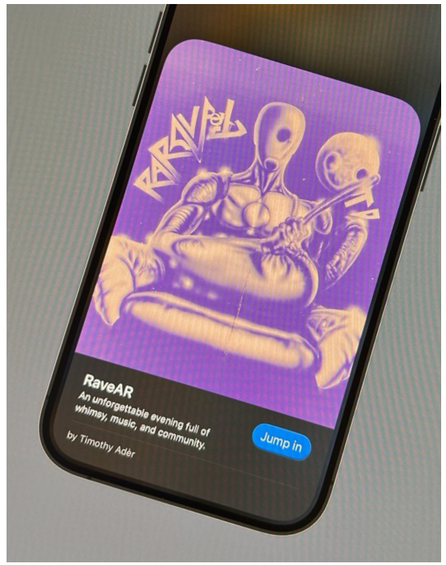
Opportunity AR becomes most effective when venues build internal ownership. Developing basic in-house knowledge empowers venues to tailor AR experiences that reflect their identity and programming, leading to higher audience engagement and richer, more meaningful experiences for visitors.

2.2 Motivation: how to commit?

Several participants stressed the importance of intrinsic motivation when adopting new technologies like AR. Curiosity, openness, and a desire to innovate proved more important than role or title. However, motivation alone wasn't enough, time and focus were recurring barriers. In some cases, AR was just seen as an "add-on" to already full workloads, resulting in rushed or partial implementation.

> *"I expect the demand will come primarily from the artist in the future. From the audience's perspective, I don't think we'll take on an initiating role that way."*
> – Venue promoter

Our use cases revealed natural interest from venue marketing departments, where AR can complement campaigns to easily generate more attention – like with the Tones campaign at Paradiso. For successful integration however, venues need not only a motivated staff member with the right skill set but also someone with enough time and headspace to fully commit. Without this, the creative and technical potential of AR is unlikely to be realized.



Opportunity Since staff capacity is limited, assigning one internal staff member (technician, marketer or intern) as the dedicated AR expert can make a big difference. Providing them with a simple training session helps build enough familiarity to work smoothly with artists or external designers. This approach creates essential in-house knowledge without demanding full technical expertise and ensures AR stays connected to your team's creative flow.

2.3 Integration: where to start?

AR proved most effective when it was not treated as a decorative add-on, but as an integrated part of the event's narrative or experiential design. This highlights a crucial insight: understanding the creative logic of AR is just as important as knowing how to operate the technology.

"What I find most interesting is that you create a framework where the image isn't just an image or a gimmick, but actually contributes to the narrative." – Artistic director

A recurring takeaway among the participating venues was the importance of integrating AR early in the production process. This applies to AR uses across all domains: artist expression, marketing, and audience services. When introduced too late or treated as an afterthought, the AR experience risks feeling disconnected or superficial.

But when integrated early in the process, there are proven moments where simple AR applications can add significant value. For example, adding a QR code to a seasonal program that only needs to be created once but can be used throughout the entire season. Or a small, fixed, AR experience in the queue outside the venue that engages visitors while they wait.

Opportunity Given the current workload on venue teams, start with low-stakes AR experiences. Such as simple virtual additions to a seasonal brochure or small moments during audience arrival or intermissions. These "fixed" moments provide a relaxed environment to experiment with AR without interrupting the main show, making it easier to discover what resonates with your audience.

3.0 Evaluating the Outcomes

This section presents the outcomes of interviews focused on the experiences and results of the test cases. We spoke with artists, their representatives, venue staff, as well as audience members.

Each test case had a different context and purpose, which influenced how the AR experience was received. Our aim was to understand how the tool functioned in real-world settings: how it was perceived by different stakeholders, how it added value (or didn't), and what practical or creative lessons could be drawn from the outcomes.

3.1 Phone use: addition or distraction?

When reflecting on their AR experiences, artists, venue staff, and audiences consistently identified the mobile phone as a key factor, opening creative possibilities but also introducing social and logistical friction that impacted flow and shared experience.

> *"When I'm at an event, I don't want to do too much on my phone ... I want to enjoy the music."* – Audience member

Most AR experiences succeeded in generating moments of social interaction, where audience members shared their screens, helped each other engage, and collectively explored the experience. These moments created a temporary "buzz" in the venue and showcased AR's potential as a social catalyst. Yet, at the same time could also become a point of tension. As concerts can be experienced as intense, emotional, collective experiences, using a phone during the show could feel isolating or weird.

> *"There will always be people who don't like taking out their phones. But I also saw a lot of people who really enjoyed testing it out – so it really depends on the group. For this show, we had clearly communicated that it would be an AR experience with a lot of technology involved, so people were somewhat aware that this was going to happen."* – Artist

Artists echoed this concern. One performer noted that asking the audience to grab their phones mid-set interrupted the show's emotional flow. In contrast, other artists – who used clear on-stage cues (like Yaro Mila) found that AR added a compelling new layer to her performance. Both agreed that framing and preparation are key: when audiences are cued in advance and know to expect a tech-enhanced moment, they engage far more enthusiastically.

Opportunity Phones are proven tools to engage audiences, as long as they're used right. AR can be a valuable way to do this, especially when it adds something meaningful to the experience. By planning for specific "phone moments" (before the show, during breaks, merch table) venues can offer an extra layer that invites exploration without disrupting the emotional core of the event.

3.2 Novelty: beyond the wow?

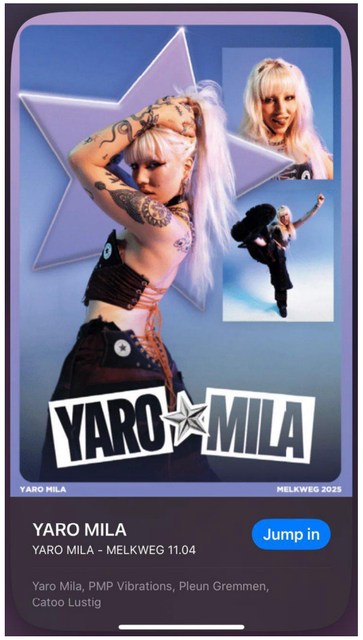
During multiple events, audiences responded with immediate interest when first introduced to the AR experience, especially when it was framed as a playful or exploratory element. The initial "wow" often came from receiving a card with a QR code or being guided with clear instructions.

"There was definitely a 'wow' moment when it started." – Audience member

While the first AR interactions sparked curiosity, audiences were less likely to return to the AR later on during the show. This was observed across various test cases, including concerts by Yaro Mila and Cafe Vanguard. The same observation applied to marketing and practical uses such as wayfinding and timetables. So to fully explore the potential of multiple AR moments during a single show or marketing campaign, further research is encouraged.

Nonetheless, music audiences attend concerts and festivals to be surprised, moved, and immersed in something new and unexpected. AR has proven to enhance this by delivering visually striking "moments" that amplify the overall audience experience.

Opportunity As music audiences seek for surprising moments, even a single, well-placed (brand) interaction can leave a lasting impression by enhancing the practical, commercial or artistic message through a virtual layer.



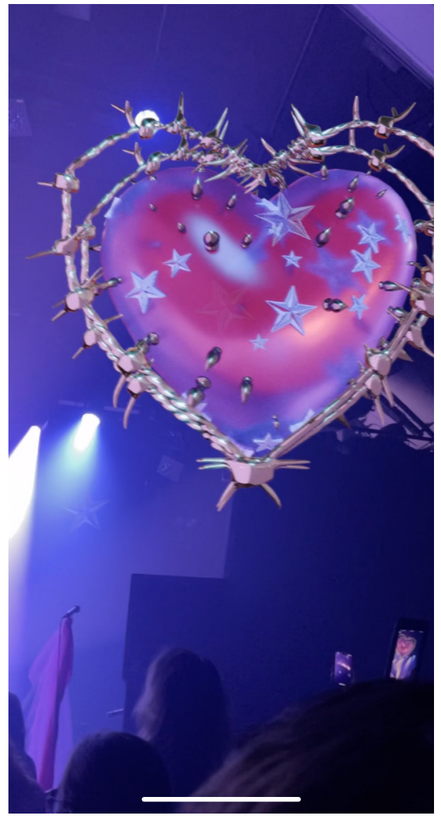
3.3 Timing: the right moment?

Across the board, timing emerged as a crucial variable. During concerts, AR was most successful during distinct moments: before concerts started, during a chorus, between acts, or when people were queuing. This applied to both practical use cases such as wayfinding and expressive use cases such as stage design.

"It worked well in those moments when people had to wait anyway" – Audience member

Artists, producers, and designers agreed that simply hoping audiences would "figure it out" didn't work. But when the entire team coordinated and aligned their efforts, valuable, well-timed, moments emerged where AR truly enhanced the audience experience.

Opportunity Music audiences naturally move through distinct phases (arrival, opening, chorus, intermission, merch table, etc.). AR works best when it responds to these moments with intention. By aligning AR content with the natural rhythm of the event, it becomes a meaningful part of the experience, rather than a distraction.



3.4 Visibility: how to stand out?

To trigger the AR experience, the placement and visibility of QR codes significantly influenced its success. When embedded intentionally into the environment (such as via physical cards with clear messaging) the AR generated more interest and uptake. Conversely, QR codes placed on vague or cluttered posters were often ignored. This was further complicated by QR code fatigue. Venue staff and marketeers noted that audiences were increasingly indifferent to QR codes in general, making them a weak trigger for engagement, particularly when the call-to-action wasn't compelling.

> *"To what extent is a QR code still relevant these days? Are they really thinking, "Oh, God, I really want to scan this?" We were a bit hesitant about that, but we went ahead with it anyway. However, we quickly realized that QR codes don't work. I don't want to say it's outdated, but people aren't exactly eager to scan a code."* – Venue representative

In addition, for the AR to truly resonate, its QR-code integration had to be meaningful, not just decorative. Both programmers and artists warned that AR could easily fall into the trap of becoming a gimmick, especially when there was no clear connection to the narrative or performance.

> *"It shouldn't become a gimmick, just because you think, 'Okay, my concert needs to be cooler,' so we just slap on a little, 'no, experience,' and that then has no connection to the show. Or, yes, there has to be a message behind it, so to speak."*
> – Venue promoter

Internally, participants emphasized the importance of aligning three core elements: the story, the technology, and the graphic design. When these were not in balance the experience faltered.

Opportunity Music venues are already full of visual triggers (stickers, posters, flyers, etc.). To make AR work, the QR invitation must be clear, visible, and stand out. Place it where people naturally look: on welcome screens, wristbands, or staff t-shirts. Avoid hiding QR codes in cluttered posters or relying on subtle hints.

3.5 Relevance: does it matter?

Ultimately, one of the venue marketeers summarized the core challenge clearly: for AR to thrive in live event settings, it must evolve from a novelty feature into a meaningful, integrated tool, something that adds value to the performance, the narrative, or the environment. Without this, AR risks being perceived as "extra" and optional, attractive in theory, but fragile in practice.

During concerts, phone use is age and genre specific and some audiences may be more open to it than others. While younger audiences have been seen to want to document and share everything on Instagram and TikTok, there's also growing pushback. This reflects a broader cultural shift where artists and audiences alike are calling for phone-free environments to protect presence and intimacy. However, when the AR experience is applied in a well-timed and meaningful way, it can enhance the live experience rather than distract from it – adding layers of storytelling, immersion, and connection that align with the vision of both artists and venues.

Opportunity Music audiences are more likely to engage when the AR experience connects to something they already care about. Linking AR to meaningful content – like an artist's story, the history of the venue, or a theme of the evening – helps it feel like an intentional part of the event. When AR is tied to the emotion or message of the show, it stops being "just a tech gimmick" and starts becoming part of the artistic experience.

3.6 Finance: new revenue models?

Several programmers and event producers described AR as a cost-effective way to design and dress a stage. Especially in genres like hip-hop and EDM — where concerts and festivals are expected to become increasingly visual — physical props and set pieces can be expensive to build and transport. AR offers a solution by enabling organisers to fill a venue with large-scale virtual designs, thereby reducing production and logistics costs.

Participants noted that AR also has the potential to offer behind-the-scenes footage, digital collectibles, or artist-driven experiences that fans are willing to pay for. This model could open the door to new revenue streams—especially when the content carries artistic or emotional value. Think of unlockable extras during a concert, interactive commentary, or special digital encores accessible only through AR.

Opportunity As live events become increasingly visual, AR offers a way to lower production costs by replacing physical set elements, while also creating new revenue models through exclusive digital content that fans are willing to pay for.

4.0 Looking Toward the Future

This section presents the outcomes of interviews focused on the experiences and results of the test cases. We spoke with artists, their representatives, venue staff, as well as audience members.

Each test case had a different context and purpose, which influenced how the AR experience was received. Our aim was to understand how the tool functioned in real-world settings: how it was perceived by different stakeholders, how it added value (or didn't), and what practical or creative lessons could be drawn from the outcomes.

4.1 Engagement: a deeper connection?

As stated above, artists, venue staff, and audiences alike see untapped creative potential in AR. From the professional side, AR was described as a powerful storytelling layer, not only for live performance but also for contextual and historical content, such as presenting the background of an artist, venue, or theme.

"Would be great if you could send hearts or influence the show somehow"
– Audience member

Audience members echoed this potential, especially when AR went beyond spectacle. Several expressed interest in informational or interactive features, such as being able to influence the show or receive hidden clues, character bios, or digital collectibles. These ideas position AR as a tool that blends entertainment with exploration, expanding the performance into a richer, layered experience.

Big-name artists, such as K-pop acts or major electronic performers, were seen as ideal early adopters due to their tech-embracing communities and existing monetization models. Respondents noted that AR could even become a premium fan experience, e.g., exclusive content unlocked through merchandise or digital tokens.

Opportunity AR holds great potential to transform music into immersive, interactive experiences that go beyond listening. By integrating features like user interaction, hidden gems, and personalized content, AR can deepen engagement and make fans feel more connected to the artist and event.

4.2 Immersion: phones or glasses?

In the field of immersive experiences, many developments are underway, and augmented reality (AR) is one of the most promising areas. Unlike virtual reality (VR), which fully replaces the real world with a digital one, AR adds a digital layer on top of the physical world, allowing users to stay present in their actual environment.

For the foreseeable future, AR via smartphones remains the most likely path forward. This is largely due to the practical limitations of current AR hardware. Even the most promising AR glasses, like the Apple Vision Pro, still resemble bulky headsets and cost over a thousand euros, mostly due to their processing and battery requirements.

Because of current hardware constraints, a lightweight, user-friendly AR headset with the immersive quality of the Vision Pro is still years away. Unless there are rapid breakthroughs in chip design, optics, and battery life, AR glasses will likely remain out of reach for most consumers for at least the next decade. This makes the smartphone – already in every audience member's pocket – the most accessible, inclusive, and cost-effective tool for delivering AR experiences in the near future.

Opportunity Since AR glasses are still years away and smartphones will remain the primary AR tool for the foreseeable future, there is significant potential to develop more sustainable, frictionless good practices. Achieving this requires ongoing experimentation and learning to optimize how AR integrates smoothly into music-related events.

4.3 Trust: who owns my data?

Another concern raised by artists and venue representatives was the broader public attitude toward data privacy, digital surveillance, and big tech. While many were excited by AR's creative potential, they cautioned that transparency and accountability are essential. In an age of rising digital skepticism, audiences may resist downloading unfamiliar apps without clear information about how their data is used and sold.

Besides concerns about users' data privacy, it is also crucial that venues and artists do not become dependent on big tech companies. If the future live industry becomes exclusively controlled by large tech corporations (a trend already visible in ticketing) venues risk losing autonomy and becoming subject to the terms and conditions imposed by these companies. For a sustainable cultural sector, it is vital that venues maintain control over their work and data.

For future development, our own AR tool (as a public domain alternative to big tech) must be GDPR-compliant and trust-building, offering clear opt-in mechanisms, ethical data handling, and transparent intentions. Otherwise, the cultural pushback against invasive tech may stall adoption.

Opportunity The AR tool we are developing is a unique public software platform offering extensive possibilities. By providing a transparent alternative to big tech, it allows venues and artists to maintain full control. Our open-source approach offers unique opportunities for community collaboration and innovation, paving the way for a sustainable, independent cultural ecosystem where AR can be explored and expanded.

Lessons Learnt

1. Make it social, not solo
Design AR for situations where people gather, this will increase group engagement and conversation.

2. Less is more
The most meaningful AR experiences aren't always large and dramatic, they could also be low-stake moments like queues, breaks or seasonal brochures. One single, well-placed AR interaction can leave a strong impression.

3. The right moment
AR works best when it's aligned with distinct, natural audience moments like queuing, arrival, one specific song, concert climax, intermissions, or the merch table.

4. Make it obvious
AR only works when people know it's there. Triggers like QR codes must be clearly visible and seamlessly integrate, not hidden among clutter or vague signage. But this goes beyond just design and placement of the QR code, it's about guiding the audience. Whether it's weaving it into promotional content beforehand or the artist explicitly pointing out the experience during this show.

5. Context is key
The AR element should be an intentional part of the overall storytelling. Audiences engage more when AR deepens an existing story, message, or emotion that's already present in the show, campaign or venue, especially when it connects to something the audience already cares about.

6. Opt out
Frame AR as an optional layer rather than a central tool. Don't make it feel like a requirement.

7. In-house ownership
Production pipelines are most efficient when one person on the team takes ownership of the AR process and bridges the gap between technical and creative roles.

8. Economic value
AR reduces production costs by replacing expansive physical decor, while potentially unlocking new income streams through exclusive, digital-only content that adds value for fans.

Final Remarks

The Next Stage AR project was shaped by the concerns and opportunities raised by venue staff during the first roundtable session. While venue representatives expressed optimism about the potential of augmented reality, they also highlighted a number of significant challenges that helped define the research context.

Among the most pressing concerns were the differences in needs between small and large venues, a general lack of capacity, and uncertainty around how both artists and audiences would respond to mobile AR. Additionally, venues raised questions around data ownership and digital autonomy in a landscape increasingly dominated by big tech.

Throughout the project, many of these concerns proved valid, but also addressable.

The accessible design of the custom AR tool played a crucial role in overcoming technical and financial barriers. Its low-threshold, browser-based interface ensured that venues (regardless of size, technical knowledge, or budget) could experiment meaningfully with AR. This accessibility not only removed a layer of complexity, but also opened up a broad range of possible uses: from creative integration on stage to low-effort activations in queues or outdoor marketing campaigns.

When it came to audience and artist engagement, the key variable was context. The success of AR hinged on whether it was integrated in a way that resonated with the artist or event's identity. When clearly framed and well-timed, audiences of all ages engaged enthusiastically, eventough there is a noteworthy phone fatigue, especially given current developments around the dominance and perceived overreach of big tech platforms. Artists who integrated AR early in the creative process—most notably Cafe Vanguard and Yaro Mila—demonstrated the strongest potential. In these cases, AR became part of the artistic narrative, sparking interaction, curiosity, and even audience desires for more real-time participation (e.g., "sending hearts"), hinting at future interactive and revenue-generating models. Concerns about data privacy and platform dependency were also addressed. By using a custom-built, GDPR-compliant AR tool developed outside of big tech ecosystems, venues and artists retained full control over content, audience data, and creative presentation. This transparency and independence proved essential in building trust and ensuring alignment with the cultural sector's public values.

With the feared challenges overcome, the diversity of use cases proved that AR can adapt to varying needs. For some venues, AR offered a cost-effective way to support emerging artists who lack resources for elaborate stage design. For others, it served as a city-wide activation tool, as seen in the Tones campaign. While practical applications (e.g. wayfinding or digital schedules) showed promise, they need to clearly outperform existing analog solutions to be truly valuable. In these contexts, AR is best seen as an additional layer, not a replacement – something illustrated by the Bostheater's "40 Years" location-based storytelling experience, which knew to outperform a regular pamflet addressing 40 years of.

By addressing the initial concerns, the potential of AR as envisioned by the venues themselves comes clearly into view: a versatile tool with both artistic and practical value, capable of engaging audiences in new ways and therefor opening up new revenue opportunities.

Do It Yourself

Our custom AR tool is free and open-source

Click here to go straight to the Web Creator Tool

Thunderboom

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