Let’s Play!
Reimagining Innovation in Public Sports Infrastructure

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Let’s Play! Reimagining Innovation in Public Sports Infrastructure

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Preface

Sport has always been a big part of my life, so getting the chance to combine it with design and leave a final impression at IDE felt like the perfect way to close this chapter — a true labour of love. What made it special was that it wasn't just about designing for sport, but about understanding how sport connects people.

Still, stepping into the complex world of public sport was something I wasn't quite ready for. It turned out to be one of the most challenging experiences I've had as a designer. There were moments when I questioned whether I was even built for this kind of work — but those same moments also taught me the most. They pushed me to listen more, and find ways to connect to everyday life through design.

As I leave TU Delft, probably for the last time as a student, I feel incredibly grateful. Grateful that I got to study a master's programme that suited me so well. Grateful for the many wonderful people I met along the way. And grateful that I now get to experience the best of both worlds as a designer — Eindhoven taught me to trust my gut, and now Delft has taught me to give those instincts structure.

Together, they shape the way I want to design for the world. It has truly been a pleasure, and I'm excited to see what the future brings.

I'm deeply thankful to everyone who supported me during my "comeback" years at university.

To Arjen and Rebecca - thank you for your guidance and encouragement, critical feedback and pushing me to be a better designer. I am so grateful for mentors like you.

To Rogier - thank you for being so supportive, enthusiastic, and open. My internship at W&H Sports was a wonderful experience to learn and grow .

To everyone that shared their experiences with me, offered insights and advice and answered my endless questions - thank you for making this project as complete as it is.

To my friends at Delft and those far and wide - what a wonderful bunch you are! Thank you for all the laughter, fun chats and endless coffee breaks.

To Pluis, Jojo and Bierie - thanks for all the gezellig conversations over dinner

To Lena - what an insane ride it's been! Thank you for always being there for me.

To my family from around the world, I am grateful for all your love and support.

To Amma, Thaththa, Nangi (& Charlie) - we might share 3 different time zones across 16,760 kms but I will always feel your love and support right by me. This one is for you.

This thesis is my small contribution to the conversation about making our world a more vital place. I hope it offers an insightful perspective on how we can use the spirit and passion of sport to bring people together.

So — let's play?

- Vim

Note on use of AI

Artificial Intelligence (AI) tools were used throughout this project to support research, design, and communication activities. These tools were applied to enhance efficiency, accuracy, and creative exploration, while all critical analysis, decision-making, and synthesis of findings were conducted by the author.

The following AI tools were used for specific purposes:

ChatGPT and Claude AI – for improving text clarity, grammar, and structure

Perplexity AI – to locate and summarize relevant academic research papers and identify key sources

Google LM – to generate concise summaries of multiple academic articles across related topics.

Turboscribe AI – to transcribe recorded interviews accurately and efficiently for subsequent thematic analysis.

Lovable AI – to prototype and visualize interactive website concepts for the Playscape Portal.

Dembrane AI – to facilitate and support online co-creation sessions and collaborative ideation activities.

AI tools were used as assistive instruments, not as substitutes for original research or design judgment. All interpretations, design decisions, and written arguments presented in this thesis are the result of the author's own critical reflection and analysis.

Abstract

Public sports infrastructure is vital to making sure our cities move. These spaces form the playgrounds where our children play and the outdoor sporting facilities we continue to use as adults.

Yet, despite their importance, participation rates among youth are dropping, and busier lifestyles mean facilities are seeing limited usage. Various attempts have been made to bring more technology, interactivity, and innovation to public sports spaces through new equipment and digital innovations. However, many of these interventions have fallen short. Facilities remain underutilized, and the gap between what's provided and what communities actually need continues to grow.

At the same time, we're witnessing exciting shifts: the rise of alternative sports formats, urban sports becoming more mainstream, and technology becoming ever more integrated into our sporting lives. This presents a unique opportunity for genuine innovation.

This thesis explores how innovation in Dutch public sports can be re-imagined to truly involve users and respond to their environments. Rather than imposing top-down solutions, it draws on design-led approaches and participatory methods to increase collaboration in building playgrounds, sports facilities, and cities that promote inclusivity and vitality.

By centering the lived experiences of communities, this research reframes public sports innovation as a collaborative challenge; one that requires listening, co-creating, and holistic thinking.

The outcome is W&H Playscape - a comprehensive toolkit designed to empower sports equipment suppliers and innovators to facilitate meaningful change in public sporting spaces.

Central to this toolkit is the Playscape Game, a card game that brings diverse stakeholders together to engage in critical conversations, fostering empathy and shared understanding. This is complemented by the Playscape Dashboard, an online platform where community sports projects are visualized and tracked in real time, alongside a curated database of participatory methods and tools. Together, these elements form an integrated system that enables W&H Sports to facilitate dialogue around public sports infrastructure and co-create sporting environments that authentically reflect community needs and aspirations.

Ultimately, this thesis advocates for a fundamental shift in how public sports infrastructure is designed and delivered in modern society. A move away from prescriptive, top-down models toward collaborative, community-centered approaches that drive systemic change.

In an era where urban vitality and public health are increasingly at risk, it calls for sports infrastructure that serves communities authentically, placing local voices at the heart of a more inclusive and active future.

Glossary of Terms

ASM – Athletic Skills Model - A Dutch conceptual model for multi-sport and skill-based development, emphasizing broad movement skills over early specialization. Often used in programming for youth sports and public facilities.

BSC – Buurtsportcoach - Neighbourhood sports coach. A professional who connects residents, schools, healthcare, and clubs to stimulate participation, organize activities, and activate public sports facilities.

BVO – Beweegvriendelijke Omgeving - Movement-Friendly Environment model, developed by Kenniscentrum Sport & Bewegen. Divides responsibilities into Hardware (facilities), Software (programming and coaching), and Orgware (policy, monitoring, and governance).

CC – Cruyff Court - Small-scale football pitches developed by the Johan Cruyff Foundation, placed in neighborhoods to promote safe and inclusive sports participation for youth.

CoP - Communities of Practice – Groups of people who share a common interest or profession and come together regularly to learn from each other, share knowledge, and develop expertise through collaborative activities.

EU (European Union) – Political and economic union of 27 European member states that coordinates policies and provides funding programs.

Global North – Generally refers to wealthier, more industrialized countries primarily located in the Northern Hemisphere, including Europe, North America, and parts of Asia and Oceania.

Global South – Generally refers to developing nations with lower economic indicators, primarily located in Africa, Latin America, Asia, and Oceania, often the focus of international development programs.

LED – Light Emitting Diode - Technology integrated into W&H Sports modular floors or courts, enabling dynamic line markings and interactive features.

Living Labs – Real-world testing environments where organizations, researchers, and communities collaborate to develop and experiment with innovative solutions in real-time.

Paperdome – 3X3 Unites' main sports facility located in Amsterdam Zuid Oost, featuring daily programming for urban sports, 3x3 basketball, and girls-focused activities, serving as an innovative community sports venue.

PARC – A social foundation and subsidiary of Griekspoor in the Netherlands, working on designing movement-friendly public spaces (e.g., Urban Dance Ground).
Public Sports – Sports activities, facilities, and programs that are publicly funded, accessible to all community members regardless of economic status, and managed by governmental or non-profit organizations.

SfD – Sport for Development - Global approach using sport as a tool for broader social outcomes, such as education, inclusion, health, and peace-building.

UDG – Urban Dance Ground - An initiative by PARC to empower girls and young people through movement-friendly public spaces tailored to dance and urban culture.

URBACT - An EU-funded program supporting sustainable urban development through knowledge exchange and integrated approaches between European cities.

Urban Sports – Sports activities that originated from or are practiced in street and urban environments, often characterized by creativity, self-expression, and use of city infrastructure, including skateboarding, parkour, 3x3 basketball, and BMX.

USWA – Urban Sports Week Amsterdam - An annual event showcasing disciplines like 3x3 basketball, BMX, skateboarding, breaking, and free-running, reinforcing urban sports' visibility and cultural relevance.

Vibe Coding - a method of software development where users describe their project ideas in natural language to an AI, which allows even those without programming skills to create functional applications and prototypes.

3X3 Unites - A social sports foundation focused on 3x3 basketball, using the sport as a vehicle for youth leadership development and community empowerment.

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Chapter 1

Introduction

1.1 Context & Background

Outdoor public sport facilities in the Netherlands are undergoing significant transformation as communities demand more from these spaces than traditional athletic functions. While recent innovations have focused primarily on technological upgrades and infrastructural improvements, these solutions often overlook the social dynamics and varied community needs that ultimately determine whether facilities are embraced and sustained over time.

This thesis investigates an alternative pathway: examining how design-centered methodologies—specifically participatory design, co-creation, and systemic thinking—can bridge the gap between innovation potential and community adoption. By repositioning design as a mediating force between municipalities, residents, and other actors in the public sports ecosystem, this research explores how collaborative processes can generate solutions that are not only technically sound but also socially embedded and contextually responsive

This research was conducted in partnership with W&H Sports, a Dutch company specializing in sports equipment and infrastructure. W&H Sports seeks to transition from its traditional role as equipment supplier to strategic partner in developing sports environments that foster inclusion and sustainability. This organizational shift provided a valuable lens through which to examine broader systemic issues within the Dutch public sports sector, including fragmented collaboration between governmental and community actors, persistent disparities in participation rates across demographic groups, and the recurring challenge of maintaining new facilities and technologies beyond their initial implementation phase.

To understand these issues more deeply, the research engaged with several converging developments reshaping public sports today: the integration of digital technologies in recreational spaces, evolving policy frameworks emphasizing community wellbeing, environmental sustainability requirements, efforts to engage marginalized populations (particularly girls and ethnic minorities), and the emergence of urban sports cultures. These developments provided analytical entry points for examining how innovation occurs—or fails to occur—within public sports infrastructure, revealing specific opportunities where design methodologies could facilitate more adaptive and responsive solutions rather than prescriptive interventions.

The empirical investigation centered on W&H Sports' LED court flooring system, which offered a concrete context for testing collaborative design processes. Through expert interviews, field observations, and iterative design workshops, the research examined how participatory methods could address the disconnect between technical innovation and community needs. The study particularly focused on enabling youth, residents, and traditionally excluded groups to influence facility development, moving beyond consultation toward genuine co-creation that strengthens community ownership and sustained engagement.

These investigations culminated in two interconnected outputs: a participatory toolkit and a digital collaboration platform. Together, these tools establish channels for previously peripheral voices to influence decision-making while maintaining the practical constraints of municipal planning and procurement processes.

1.2 Company Profile - W&H Sports

W&H Sports is a Dutch supplier specializing in sports equipment and infrastructure development. They cater to clients throughout the spectrum of sport, from international, professional clubs, to local grassroots initiatives, and serves municipalities, schools, sports clubs, and foundations across the Netherlands, Europe, and the Middle East. Their mission is to create safe, inclusive, and high-quality sports environments that inspire movement and community connection (W&H Sports, 2025).

W&H Sports' extensive product portfolio includes standard sports equipment, customized sports field layouts, and products for indoor and outdoor sporting applications. An impression of some of these products are outlined in Figure 1.

Figure 1: Product portfolio W&H Sports

Business Model and Market Context

W&H Sport's core business operates through project-based delivery within a complex ecosystem involving government bodies, urban developers, sports federations, and educational institutions. These involve traditional procurement processes driven by established relationships, word of mouth, contracts, and competitive tenders often prioritize budgetary and technical specifications over innovation and community engagement.

Innovation Initiatives

The company has demonstrated a clear ambition to grow beyond their core business through strategic partnerships and exclusive licensing deals with specialized companies to expand their offering and capabilities. In 2019, W&H Sports co-founded GreenMatter B.V. with Lankhorst Engineered Products, a circular economy venture that processes discarded artificial turf into recyclable materials for environmentally friendly sports field equipment and furniture.

Strategic Opportunity

As municipalities increasingly prioritize community-based development that serve broader social objectives, W&H Sports has an opportunity to transition from typical infrastructure supplier to a strategic partner— one that embeds community engagement throughout the innovation and implementation process. This transformation could position the company to grow into a key player in the future of public sport spaces in The Netherlands.

1.3 Project Brief & Research Questions

This research examines W&H Sports' LED outdoor flooring system, developed through a consortium of specialized partners, as a case study for understanding innovation adoption in public sports infrastructure [See Figure 2].

The innovation emerged from collaboration between four companies: **(1) W&H Sports** coordinates the project while **(2) LumenArt**, a Dutch lighting specialist from the hospitality and marine sectors, engineers the embedded lighting elements for outdoor use; **(2) Bergo**, a Swedish manufacturer, supplies the FIBA-certified *Ultimate and Ulitmate Plus* flooring tiles that house the technology; and **(4) SmartGoals B.V.** integrates connectivity infrastructure, enabling interactive features through their sensor-based sports products.

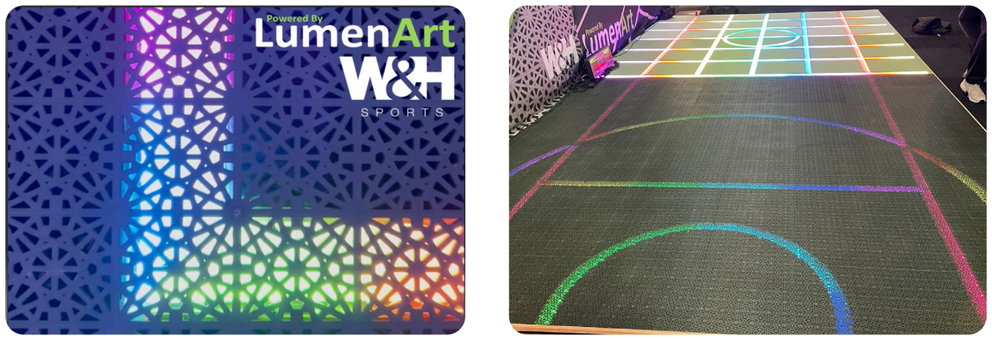


Figure 2: The LED Flooring

The system embeds programmable LED strips beneath modular flooring tiles, replacing fixed painted lines with dynamic, app-controlled court markings. Users can instantly reconfigure spaces for different sports, customize visual elements, and activate training features through animated light patterns. This flexibility transforms single-purpose courts into adaptable, multi-sport environments.

While a functioning MVP has been developed, the product remains pre-market—an advantageous position for examining fundamental questions about innovation adoption in public spaces. This timing allows investigation into user engagement, implementation processes, and sustainability factors before market launch decisions solidify.

Dutch municipalities report a persistent challenge: despite substantial public investment in sports infrastructure, many innovations fail to achieve meaningful adoption post-installation. Resources remain underutilized while the intended societal benefits of increased participation, community cohesion and enhanced wellbeing prove difficult to realize or measure.

This research investigates how design methodologies can bridge this adoption gap, exploring strategies that enable equipment suppliers to move beyond transactional relationships toward sustained engagement with communities, municipalities, and the spaces they serve. The goal is strengthening both societal value and commercial viability of sports innovations.

This leads to the central research question of this thesis:

RQ1: How can sports equipment suppliers, like W&H Sports, enhance the societal and market impact of their innovations by co-innovating with stakeholders and the built environment through design-led approaches?

The research also investigated the following sub-research questions:

RQ2: What systemic frictions prevent effective collaboration between sports equipment suppliers, municipalities, and communities in public sports infrastructure development?

RQ3: Why are end users excluded from sports infrastructure decision-making processes, and what are the consequences for innovation adoption and community ownership?

RQ4: How can sports equipment suppliers use participatory design methods to meaningfully engage with communities and stakeholders throughout the innovation process?

RQ5: What new roles and capabilities must sports equipment suppliers develop to function as strategic facilitators rather than traditional vendors in public sports infrastructure projects?

This research looks at public sports infrastructure as a systems design challenge rather than just a technical or procurement issue. It explores where sports equipment suppliers can step beyond their usual business role to create more meaningful impact through their innovations.

1.4 Approach & Methodology

Rather than addressing this challenge from a purely commercial lens, the research set out to explore the dynamics of the system from within, using multiple approaches to build this understanding. Desk research mapped what has already been attempted in public sports, identifying proven approaches and common pitfalls. Expert interviews offered a more realistic view of how different stakeholders perceive their roles and where potential white spaces exist. Attending public events and engaging with actors on the ground gave a glimpse how innovation in sports might be approached differently, and how it currently impacts the communities they aim to serve.

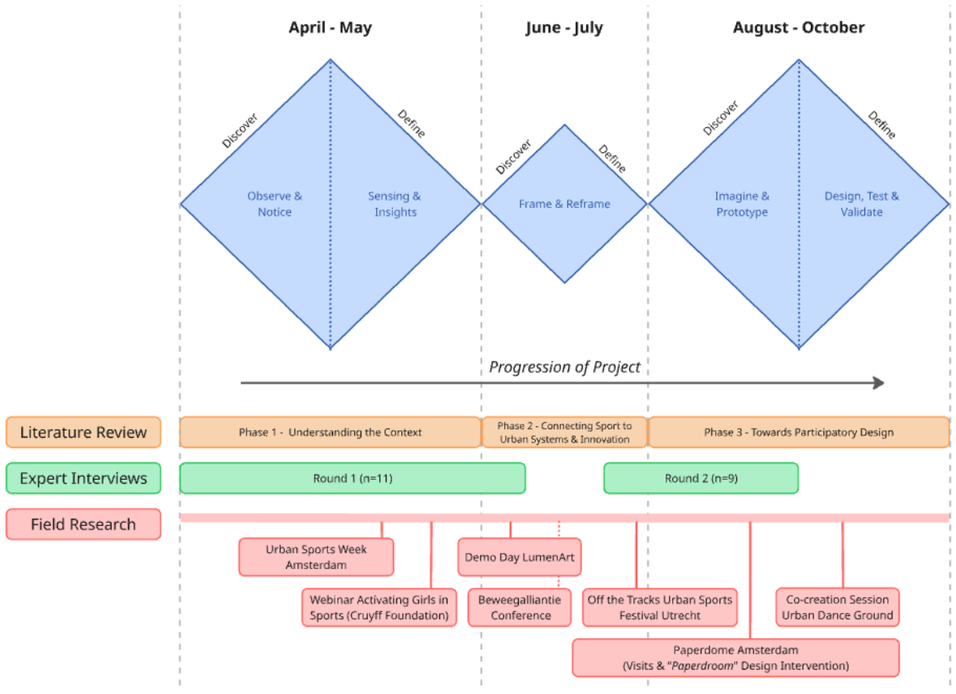


Figure 3: Research Process

1.4.1. Exploratory Literature Review

An evolving literature review process that began with academic and grey literature on sporting trends, youth engagement, and innovation in the sports industry. As the research developed, the scope expanded to include studies on urban planning, stimulating social cohesion, designing multi-functional spaces, designing for women in sports, and reports from sports foundations and participatory design experts. This iterative approach was shaped by emerging themes in stakeholder conversations and practical needs from the project. *[See Chapter 2]*.

1.4.2. Emperical Qualitative Research (Expert Interviews)

To build a comprehensive understanding of the public sports infrastructure landscape, semi-structured interviews were conducted in two rounds with key actors involved in developing, implementing and running public sports spaces. The primary goal was to explore each stakeholder's role, goals, values, and motivations, while also examining their perspectives on collaboration, implementation challenges, and the potential of emerging innovations like W&H Sports' LED Flooring Tile.

A total of 20 expert interviews were conducted between April and August 2025. Participants were recruited through W&H Sport's network and further snowball sampling. The interviews followed a semi-structured approach, allowing for both focused inquiry and open-ended discussion tailored to each participant's expertise and role. Each sessions lasted between 30 minutes and 1 hour and were conducted primarily online via video conferencing, with some held in person when possible. All interviews were audio recorded and transcribed for analysis.

Round 1 focused on key stakeholders *[See Chapter 3.1]* and Round 2 targeted specialists in the domains of public sports infrastructure design, participatory design techniques, participatory tool developers, and sports facility architects. *[See Chapter 4.2]*.

Coding and thematic analysis was carried out to identify patterns across the interviews, and key quotes were extracted from each transcript and clustered to reveal overarching insights. This iterative process produced 16 key insights, which were subsequently organized into 4 main themes that informed the design of the intervention *[See Chapter 3.1.2.]*.

1.4.3. Field Research

Field research focused on observing public events and workshops to understand how sports is experienced on the ground. This included attending international sporting events, urban sports festivals, as well as webinars and seminars covering topics from Dutch sport policy, to getting girls to move more and empowering youth through sport. I also conducted workshops and co-creation sessions at chosen design intervention sites, including the Paperdome in Amsterdam and the Urban Dance Ground (UDG). *[See Chapter 4.4.]*

1.4.4. Research Triangulation

To strengthen the credibility of some of the findings and conclusions drawn, this research employed methodological triangulation— a technique that "promotes the use of multiple data collection methods such as interviews and observations" to examine a phenomenon from different perspectives (Denzin, 2017, p.301).

Figure 4 explains how the research combined approaches based on both formal methods and lived realities to build a comprehensive understanding of the public sports system from multiple sources.

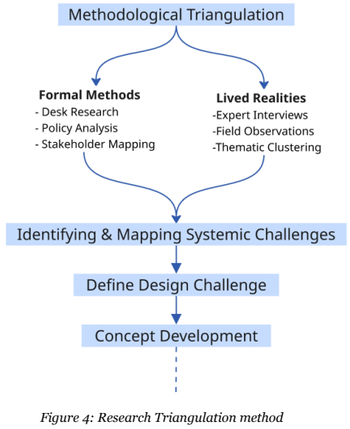


Figure 4: Research Triangulation method

1.5 Stakeholders

To map the different stakeholders within public sports in the Netherlands, this research adapted Mendelow's power-influence matrix as its foundational framework (Mendelow, 1991). This maps the stakeholders according to their level of power to influence certain outcomes and their degree of interest within the public sports domain.

To visualize relational dynamics, color-coded "power dynamic" zones were added between stakeholders, represented through varying blue intensities. Light blue connections indicate minimal collaborative relationships, medium blue represents moderate interconnectedness, while dark blue signifies strong collaborative ties and significant mutual influence between stakeholders.
[See Figure 5]

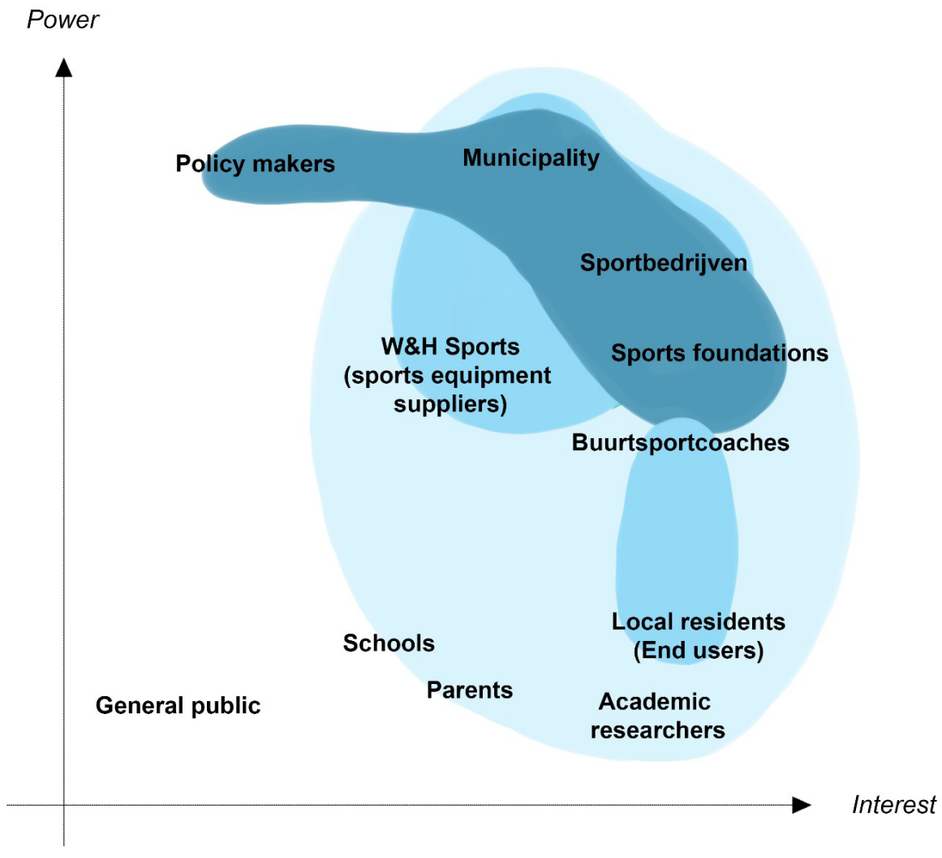


Figure 5: Stakeholder Map

1.6 Project Scope

Innovations in the public sports domain spans multiple levels of scale and types of interventions, which can broadly be categorized into three overlapping domains, Hardware, Software and Orgware. This is based on the Dutch "Beweegvriendelijke Omgeving Model" (BVO model) or "Exercise-friendly Environment Model", from the national Knowledge Center for Sport and Movement (Hoyng, J., & Scholte, D. (2021).

The adaptation of the BVO model to scope this research is fitting because of its relevance in the European / Dutch sporting context. It is a model commonly used by municipalities, sports professionals, and social organizations to assess and design "exercise-friendly" environments. It also aligns well with the language of local stakeholders, such as Buurtsportcoaches (BSCs), sport companies, and policymakers.

It also offers a useful structure to explore gaps, frictions, and opportunities for intervention across infrastructure, activation, and governance [See Figure 6].

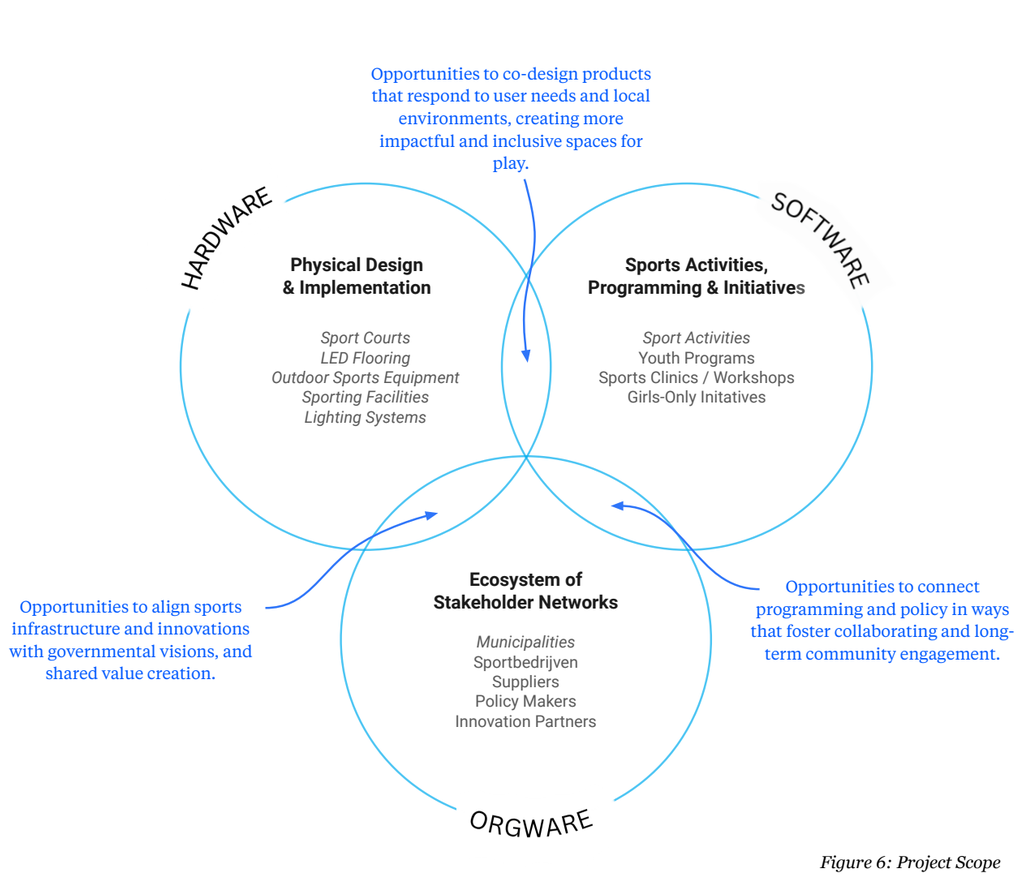


Figure 6: Project Scope

Chapter 2

The Influence of Sports

2.1 Innovation in Sports

2.1.1. How do we Define Innovation in Sports?

Innovation in sports refers to the creation, introduction, or application of new ideas, technologies, methods, or systems that lead to meaningful improvements in how sports are played, organized, experienced, or commercialized (Tjønndal, 2016). It encompasses a broad range of developments across the physical, digital, and social dimensions of sport.

Key areas of sports innovation include:

Equipment and Material Innovation: Enhancements in the design and performance of sports equipment, clothing, and accessories that contribute to better athletic outcomes, greater comfort, or improved safety for players.

Digital and Data-Driven Technologies: The integration of digital tools and data analytics in sport to enable smarter decision-making for coaches, athletes, and officials. This includes wearable technologies and sensors, video analysis, performance tracking, and decision-support systems.

Training and Development Methods: Innovations in training methods have proven effective in improving athlete development, reducing injury risks, and supporting more personalized coaching approaches.

Spatial and Infrastructural Innovation: New approaches to the design and use of physical spaces, including adaptable or multi-use surfaces and modular setups. These developments reflect a broader move toward adaptive, user-centered spaces that can evolve with community needs and promote broader participation in physical activity.

Fan Engagement and Experience: Emerging technologies such as interactive platforms, AR/VR, live content personalization, and immersive media are reshaping how fans follow, connect with, and participate in sporting events and engage with athletes.

Game Formats and Accessibility: Innovation may also involve adapting the structure or rules of sports to increase accessibility, encourage broader participation, or appeal to new audiences.

2.1.2. Why Innovation in Sports Matters

While innovation in sport is often associated with enhancing athletic performance and competitive advantage, this thesis looks beyond the performance domain to examine how innovation in sport affects broader societal challenges related to health, social cohesion, urbanisation, and inclusion.

In response to sedentary lifestyles, spatial limitations in dense urban areas, and social inequalities, innovation in the sports domain offers new ways to encourage physical activity, strengthen communities, and reimagine public spaces.

Governments and organisations increasingly recognising sport as a tool for public good, and thus the ability to effectively innovate in this space has become a key policy and design priority (Ekholm, 2016). More inclusive approaches ensure that different populations—including youth, people with disabilities, underrepresented and marginalized groups —can access and enjoy sports on equal terms (Casey et al., 2022).

Technological advancements have helped to elevate smaller or emerging sports to global visibility, breaking down traditional barriers and enabling broader cultural exchange (Yan, 2023). These advancements have also significantly enhanced fan engagement and experience (Previati, 2020), making sport more accessible, personalised, and dynamic for wider audiences. Through increasingly available immersive digital technologies such as Augmented Reality (AR), Virtual Reality (VR), real-time data analytics, and interactive platforms, fans can participate in sport in entirely new ways.

Additionally, sports innovation drives economic growth. The creation and commercialization of new sports technologies can open up new industries, fresh market opportunities, which in turn fuel employment, entrepreneurship, and global industry competitiveness (Ministerie van Volksgezondheid, Welzijn en Sport, 2014; Wu, 2025). Research in The Netherlands has shown that in neighbourhoods where more residents exercise weekly and meet physical activity guidelines, healthcare costs are significantly lower - highlighting the larger economic benefit of investing in new and better ways to sport.

Finally, sports innovation supports sustainable development of products and services. From energy-efficient stadiums to eco-conscious materials, the sports sector is increasingly adopting practices that align with global environmental goals. These efforts not only reduce ecological footprints but also set positive examples for other industries to follow (Parsamyan & Orłowski, 2024).

2.1.3. Policy, Frameworks & Initiatives Shaping Public Sports

To understand how innovation in sport emerges, it is first necessary to examine the broader policy and institutional context that shapes the public sports landscape. This section reviews key European, national, and local frameworks, agendas, and initiatives that influence how sport is governed, funded, and implemented in the Netherlands [See Table 1].

The aim of this analysis is to identify overarching themes and opportunities within the public sports domain. The selected documents were chosen because they:

1. *Represent the broader ecosystem of sport governance*
2. *Reflect current priorities in the European and Dutch Context*
3. *Bridge Policy and Practice*

2.1.3.1. Key Overarching Insights from Chapter 2.1.3

→ **Integration Across Sectors** - Policies increasingly link sport with health, education, culture, and spatial planning. However, coordination and shared accountability between these domains remain weak, leading to fragmented execution.

→ **Participation and Co-Creation** - Every level emphasizes participation. Yet, genuine co-design and community ownership are still exceptions rather than norms, indicating space for design-led approaches that enable meaningful engagement.

→ **Local Innovation and Experimentation** - Municipal and foundation initiatives demonstrate that innovation thrives when users are directly involved in shaping spaces and programs.

→ **From Policy Vision to Practice** - Despite strong national ambitions for inclusion and activity, implementation depends heavily on local ecosystems of collaboration, funding, and trust—mirroring the Orgware dimension of the BVO model.

→ **Evidence-Based Development** - Emerging data-driven tools point toward a future where participation and spatial use are continuously monitored, providing new opportunities for adaptive policy and design.

See Appendix A for a detailed analysis of these frameworks

Category	Documents / Actors	Focus / Intent	Key Takeaways
European Policy & Programmes	- URBACT - SHARE 2.0 - STANDOUT	Encourage collaboration among European cities and organizations. Strengthen sport's contribution to health, inclusion, and urban regeneration. Support knowledge sharing, active city networks, and participatory governance.	Establishes sport as a component of EU urban and social policy. Highlights the value of inter-cultural learning, co-creation, and city-to-city cooperation in developing inclusive and active environments.
National Policy & Regulation	- National Sporting Agenda - Omgevingswet	Promote equal access to sport and physical activity for all citizens. Integrate movement and livability goals into health and spatial planning policies. Strengthen collaboration among municipalities, sport organizations, and social partners.	Demonstrates how national policies position sport within broader agendas for health, inclusion, and spatial quality. Emphasizes cross-sector collaboration as essential for realizing movement-friendly environments.
Municipal Agendas	Amsterdam, Rotterdam, Eindhoven, Nijmegen Urban Sports Agendas	Translate national goals into city-level action plans. Promote urban and street sports, accessibility, and social connection through public space. Link sport to urban identity of the city, youth engagement, and local partnerships.	Reveals how municipalities use sport strategically to strengthen local identity, activate public space, and promote participation. Showcases the role of cities as key drivers of inclusive and community-oriented sports development.
Conceptual Frameworks	- BVO Model - ASM Model - Placemaking Principles	Provide frameworks for designing and evaluating environments that support diverse and inclusive movement. Integrate physical, behavioural, and organisational aspects of sport and activity.	Highlights how conceptual models can bridge the gap between policy and practice. Supports systemic thinking around public sport environments by integrating hardware, software and orgware.
Foundations & Initiatives	- Cruyff Foundation - Krajicek Foundation - 3X3 Unites - GAME	Activate public spaces and stimulate youth participation through sport. Promote inclusion, leadership, and social development. Operate through local ambassadors, coaches, and partnerships with municipalities and schools.	Good examples of how community-based programmes translate social ambitions into tangible impact. Demonstrates the power of local leadership, trust, and collaboration in creating inclusive and sustainable public sports spaces.

Table 1 : Overview of Policy, Frameworks & Initatives in Public Sports

2.2 Impact of Sports on Society

2.2.1. Social Cohesion & Community Development

Sport serves as a powerful universal language, capable of uniting people across diverse cultures, backgrounds, and beliefs (Moustakas & Robrade, 2022). Whether through participation, spectating, or volunteering, individuals who engage in sport share experiences that foster belonging and strengthen community bonds. In the Netherlands, community sports clubs and leagues serve as vital hubs for social interaction and integration, with research consistently showing that participation in well-structured community sports programmes enhances perceptions of social cohesion and civic engagement, particularly among young people (Spaaij, 2009).

Participation in sport is associated with the creation of social capital, as involvement develops networks, relationships, trust, and shared values that individuals and communities can leverage for collective benefit (Marlier et al., 2015; Spaaij, 2009). Sport also plays a key role in promoting inclusion and generating social capital among marginalised populations such as refugees, ethnic minorities, and at-risk youth (Nesse et al., 2023; Block & Gibbs, 2025).

Globally, Sport for Development (SfD) initiatives have been implemented as instruments for peacebuilding, reconciliation, and social inclusion, particularly among children and youth affected by conflict, displacement, or marginalisation (Clarke, 2021; Giulianotti, 2011). In post-conflict and refugee settings, structured sport activities have been shown to rebuild trust, encourage leadership, and provide safe spaces for dialogue (Cárdenas, 2016).

In Europe, sport-based initiatives are increasingly recognised as tools for urban transformation. When integrated into regeneration strategies, sports facilities become collective spaces that strengthen social connections, improve residents' quality of life, and generate "opportunities for social interaction, economic development, and cultural exchange" (Lioce, 2025b).

Sport's influence extends to broader advocacy and civic engagement, with athletes and sports organisations increasingly use their platforms to promote social justice and cultural acceptance (Moustakas & Robrade, 2022). At a global scale, major sporting events such as the Olympics and FIFA World Cup have served as symbols of peace and solidarity, occasionally bridging political and ideological divides (Rowe, 2012).

A socially cohesive society is one that works toward the well-being of its members, combats exclusion, fosters a sense of belonging and trust (Simmons, 2018). Recent shifts in sport policy and practice emphasise this need for community involvement and inclusive participation. As Schulenkorf (2012) notes, "simply providing access to sport is insufficient—programmes must be carefully designed with community input to ensure cultural sensitivity and meaningful engagement. The Dutch National Sporting Plan reinforces this perspective. Its ambition to make the Netherlands the "World's Sportiest Nation by 2032" depends on "better sporting environments that citizens rate highly for availability, accessibility, affordability, and sustainability" (NOC*NSF, 2023). Crucially, the plan stresses early community involvement in shaping activities, recognising that ownership is linked to long-term engagement.

Similarly, Amsterdam's Urban Sports Agenda explicitly ties participation to empowerment, stating that "a central pillar of the policy is empowering youth to actively shape their environments" through partnerships with organisations such as 3X3 Unites, embedding leadership and entrepreneurship into sport (Gemeente Amsterdam, 2021).

A recent study by the University of Groningen (De Boer et al. 2025) for the municipalities of Rotterdam and Amsterdam provides further evidence of sport's socio-economic impact. The study found that neighbourhoods where residents exercise more frequently have significantly lower healthcare costs, even after accounting for socioeconomic and demographic factors.

On average, a 1% increase in weekly exercise corresponds with approximately €9 lower annual healthcare costs per resident, resulting in millions in potential savings for large urban areas. These effects are most pronounced in low socioeconomic status (SES) neighbourhoods, where sports participation rates are lower but the potential for impact is greater. The findings demonstrate that encouraging physical activity is not only a public health priority but also a strategy for reducing social inequality and healthcare costs.

Figure 7: 3x3 Basketball (3x3 Unites ,n.d.).

2.2.2. Urban Planning & Placemaking

The integration of sports into urban planning has evolved from a peripheral consideration to a central strategy for city-making and regeneration. Urban regeneration projects increasingly re-purpose underutilized or post-industrial sites into multi-functional sports and recreational hubs, transforming neglected areas into vibrant, active community spaces (Book, 2025).

“Sport urbanism” advocates for the integration of sports into urban design as an inclusive and sustainable approach that enhances both the livability and “functionality of public spaces” (Lioce, 2025). This shift reframes sports facilities from being purely recreational amenities to essential elements of urban infrastructure that shape spaces, but also help to create more social interaction, and community identity.

Placemaking represents another significant paradigm shift in urban planning. This approach calls for a move from physical changes in the environment created purely by urban planning professionals, towards an iterative process that involves various actors in the making of a place (Akbar et al., 2021). Placemaking through sports operates at multiple scales, from intimate neighborhood interventions to city-wide regeneration strategies. This participatory approach has been especially effective in building community engagement and ownership, as both sport and design practices can shape physical urban spaces, reflect community aspirations, and support collective decision-making through the co-creation of urban environments—offering an alternative, grassroots form of participatory planning (Valle & Kompier, 2013).

Spatial accessibility and strategic location remain crucial to the success of such interventions. Research shows that proximity to parks and recreational facilities correlates with higher physical activity levels (Kaczynski & Henderson, 2007), while poor accessibility limits participation (Thibodeau, 2020).

Initiatives such as URBACT’s Re-Gen network (Urbact, 2021) demonstrate how involving young people as active stakeholders in co-designing, co-creating, and co-managing public spaces ensures that urban environments reflect their needs, identities, and aspirations (Lioce, 2024b).

Adolescents view public spaces as stages for self-expression, arenas for competition, and places for belonging (Lioce, 2024b). Through urban sports such as skateboarding and 3x3 basketball—alongside cultural practices like street art, music, and fashion—young people actively contribute to the “urban aesthetic” by revitalizing underutilized spaces into social and cultural hubs that even attract new forms of tourism (Lioce, 2025b; 2025c).

This dynamic relationship between youth and the urban space suggests that cities can create more inclusive and vibrant environments by actively involving young people and integrating their behaviors and preferences into planning decisions.

Rather than viewing youth as passive users of space, this approach recognizes them as creative agents capable of building spaces that support their own individual expression, foster a sense of ownership and pride, whilst contributing to more diverse and connected urban landscapes (Lioce, 2025c).

Figure 8: Placemaking for Girls (Delbeecke, 2022)

2.2.3. The Digital Transformation of Sport

The sports industry is among the world's fastest-growing sectors, continually expanding its reach and impact across diverse areas of the global economy (Zhang et al., 2018). Yet, despite this rapid growth, it remains relatively under-explored as an economic domain, with limited recognition and understanding from both practitioners and scholars—particularly from an entrepreneurial perspective (Pellegrini et al., 2020). Moreover, much of existing sport research has traditionally been conducted within disciplinary silos, focusing on isolated fields such as engineering, management, or sociology rather than adopting an integrated, cross-disciplinary approach (Ratten, 2019).

These patterns are changing, as evidence grows for the value of interdisciplinary research, particularly as the sport industry continues to evolve. To remain competitive in this increasingly interconnected global business environment, sports organizations must treat technology as essential for adaptation and strategically consider its role in driving innovation (Shilbury et al., 2016).

Technological innovation in sport can be defined as "the employment of a product with enhanced performance appearances to provide new or developed services and positively affect the customers' experiences" (Faroudi et al.). According to Ratten (2019), technological innovation affects sport through both cultural and social dimensions, and the value of technological innovations in sport depends heavily on users and context. Stakeholders interpret and apply technology's value differently; businesses develop innovations to gain competitive advantage, athletes use them to improve performance, and organizations pursue them to explore new applications, acquire proprietary technologies, achieve economic and social gains and stimulate further creativity.

Culturally innovation has changed the types and forms of sport played, with new sports expanding on traditional formats, and more people accepting different sports (Houlihan, 2005). Urban sports like skateboarding, BMX, free-running and alternative forms of movement like yoga and dancing have entered the mainstream thanks to advances in television and streaming technologies that have made these activities more visible and accessible to global audiences. This shift is also supported by broader lifestyle trends that blend sport with fashion and identity.

Socially, technology has changed how people participate in sport and physical activity. New materials in sportswear, fitness tracking devices, and health apps encourage more active lifestyles, while social media fosters direct and personal engagement between athletes, organizations, and audiences. Advances in digital communication and online platforms have reshaped how sport is viewed, purchased, and played (Ratten, 2011). This shift has been accompanied by growing competition among athletes, rising fan expectations, and the broader integration of these digital layers of technology into everyday life.

The Social Media Boom

The most significant change in the sports media landscpae stems from social media integration (Deloitte, 2025). Between 2020 and 2024, the share of Americans watching live sports on social media grew by 34%, and consumption of sports highlights increased by 44% (GWI, 2025). These platforms create year-round "parallel sports universes," where discussions, highlights, and user-generated content create engagement levels that can rival live events.

This trend resonates strongly with Generation Z, whose multi-screen habits represent a new mode of participation. Gen Z users are 21% more likely to play mobile games and 20% more likely to use social media while watching sports (GWI, 2025). Rather than distracting from live viewing, these layered streams of content are seen as complementary, creating a more immersive experience, where fans expect instant interaction and the feeling of watching alongside a community.

Interactive platforms such as SmartGoals and TGL Golf are using data-driven insights to attract new demographics (Gyuró, 2024; Nielson, 2025). At the same time, hybrid "phygital" environments that blend real-world activity with virtual engagement are on the rise. Sim racing, for example, is increasingly recognized for "breaking down barriers in motorsport" by offering accessible pathways for fans and competitors to engage in both virtual and real-world racing (Boudreau, 2023).

The digital transformation has also reshaped emotional engagement with sport. Half of Gen Z and millennial audiences report stronger connections to social media creators than to traditional TV personalities (Deloitte, 2025). Athletes have adapted by becoming content creators themselves, bypassing traditional media to build direct relationships with fans. This creator-driven format has also given grassroots athletes and community organizations new opportunities to mobilize audiences, tell authentic stories, and build a sense of belonging.
Social media is also becoming a powerful tool for urban planning and participatory design. Platforms like Instagram and TikTok can offer insights into "where teenagers congregate and how they interact with public areas" (Lioce, 2025c). In Albacete, Spain, city planners used Instagram campaign to engage teenagers in identifying underused public spaces and suggesting improvements for sports and recreation. This process helped provide "actionable insights to shape public spaces that aligned with adolescent aspirations" (Lioce, 2024b).

Figure 9: Multi-screen viewing. retrieved from Guram (2021)

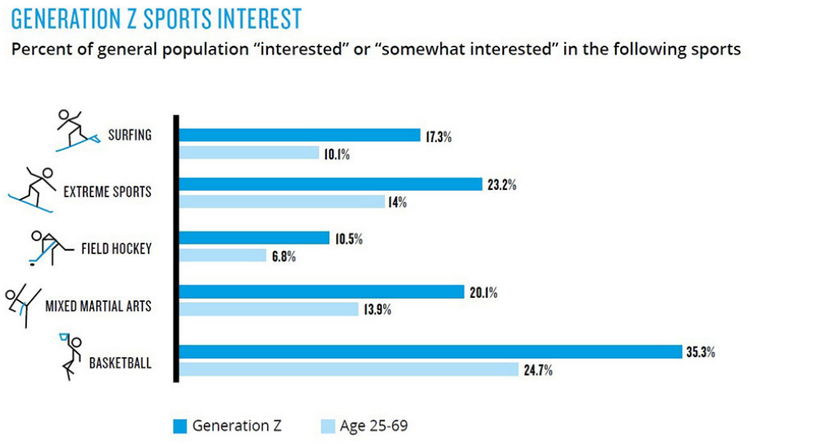


Figure 10: Gen Z Sports Interest (Nielson, 2020)

2.2.4 The Rise of Urban & Alternative Sports

Globally, sport is undergoing a structural shift from institutionalized club models to more informal, flexible, and lifestyle-driven formats. Street sports such as skateboarding, 3x3 basketball, parkour, and breakdancing have moved from underground subcultures to mainstream recognition, culminating in their inclusion in the Olympic Games since Tokyo 2020. These activities seem to resonate with younger generations because they offer flexibility in terms of timing, location, and social structures - contrasting sharply with the rigid nature of traditional team sports.

New racket sports such as pickleball in the US and padel in Europe demonstrate how quickly new formats can capture attention, by lowering barriers to entry and emphasizing social interaction over competitive excellence (Fram-Schwartz, 2025).

At the European level, projects like URBACT (Urbact, n.d.) and SHARE (SHARE2.0, 2025) frame urban and informal sport as a driver of inclusivity, civic engagement, and regeneration, highlighting its capacity to activate underused public spaces while bridging participation gaps. They emphasize that cities must "treat sport not only as organized competition but also as a spontaneous practice embedded in everyday life," pointing to urban sport as a cultural form with strong potential to engage youth, women, and marginalized groups.

In the Netherlands, this shift is increasingly reflected in national policy. The National Sporting Agenda 2032 recognizes the growing importance of hybrid participation formats that combine formal club structures with informal and self-organized sport. The strategy aims to respond to participation gaps, with 39% of Dutch children aged 4–11 not meeting minimum activity benchmarks in 2020 and only 10% using public spaces for sport weekly. The agenda emphasizes "early intervention and environmental improvements" and commits to "promoting sport in public spaces," framing urban sport as a cornerstone of public health and social cohesion (NOC*NSF, 2023).

Staying within the Dutch context, urban outdoor sports have surged in popularity. This was especially evident through events like Urban Sports Week Amsterdam (USWA), where these sports take center stage—with competitions in BMX, 3x3 basketball, breaking, skateboarding, freerunning, and in-line skating drawing large crowds both locally and internationally.

The ascendancy of 3x3 basketball in the Netherlands is sparked by recent successes on the global stage. The men's national team captured Olympic gold at Paris 2024, defeating host nation France in the final, while the women's team emerged as World Champions in Ulaanbaatar in 2025. Breakdance has also received a significant spotlight, particularly with Dutch athletes such as Menno van Gorp—a three-time Red Bull BC One world champion—anticipating the discipline's Olympic debut at Paris 2024. His prominence highlights the growing recognition and mainstream embrace of breakdance as both art and sport, embodying the urban aesthetic of functionality, creativity and freedom of expression.

At the municipal level, cities like Amsterdam, Rotterdam and Eindhoven have integrated these ideas into their Urban Sports Agendas. In Amsterdam for example, urban sports now rank among the top activities for youth. 21% of children aged 5–12 take part, and among adolescents aged 13–18, urban sports are the third most practiced category after football and swimming (Gemeente Amsterdam, 2021).

The municipality attributes their popularity to "flexibility, cultural relevance, and lifestyle integration," further noting that girls prefer in-line skating and urban dance while boys gravitate toward freerunning and skateboarding. The city is investing in multi-functional sporting infrastructures, climate-adaptive courts, and youth-led programming, while also recognizing the need to balance professionalization and grassroots authenticity. Ambitious goals include supporting "urban top-sporters in reaching international levels" while still empowering youth to shape facilities through co-creation and participatory design.

Local sports foundations echo these efforts. The 3X3 Unites foundation frame their entire model around local ownership. Their Paperdome project in Amsterdam Zuid illustrates how co-investment, youth-led programming, and cross-neighborhood partnerships can transform a facility into what they describe as a "breeding ground" for youth development. Fostering community ownership is critical, and spaces thrive when users feel responsible for and invested in them. At the same time, it is important that these sports remain true to their urban character—open, flexible, and culturally grounded—while also being inviting enough to motivate newcomers to join, participate, and experiment.

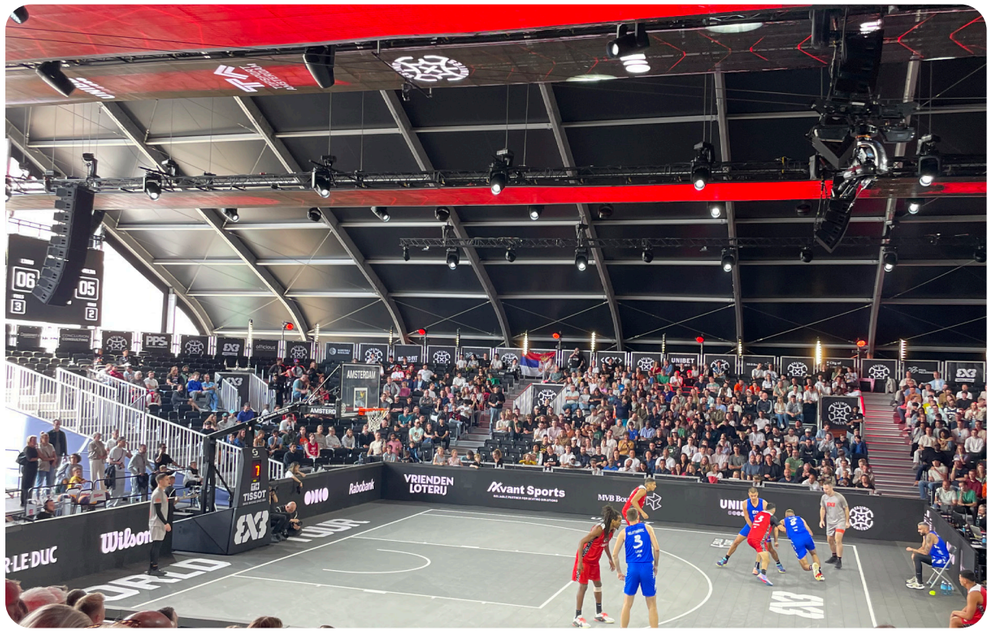


Figure 11: FIBA World Tour, 2025, USWA, Amsterdam

2.3 Challenges and Critical Perspectives

2.3.1. Decline in Participation

Global health data reveals declining physical activity levels across populations worldwide. Physical inactivity among adults has risen from 26% in 2010 to 31% in 2022, with projections reaching 35% by 2030 (WHO, 2024). This pattern has prompted sports organizations and urban planners to reconsider how physical activity is promoted, moving away from institutional, schedule-dependent models toward more accessible, flexible approaches.

In the Dutch context, the Netherlands lives up to the label of being a "sporting nation," with comparatively high youth participation rates: around 64% of children and 77% of adolescents engage in weekly organized sport (Takken et al., 2018). Yet, these encouraging figures mask a deeper concern: overall physical activity levels among young people remain insufficient. In 2020, 39% of Dutch children aged 4 to 11 did not meet the minimum benchmark for physical activity only 10% of children use public areas for sport or play on a weekly basis (NOC*NSF, 2023).

Motivation also plays a crucial role in sustaining engagement. Research among Dutch adolescents aged 12–15 identified key drivers of participation as "fun, enjoyment, a positive atmosphere, skilled trainers, and opportunities to play at appropriate levels" as essential for continued involvement. When these factors are absent, young people often cite competing interests, time constraints, and declining enjoyment as reasons for disengagement (Faber et al., 2023). These are largely emotional and social barriers, rather than purely structural ones, suggesting that promoting participation requires a stronger focus on intrinsic motivation and community belonging.

Gender disparities further complicate this picture. Dutch boys are overrepresented in organized sports clubs, while girls more often participate outside formal structures (Acharki et al., 2023). Football remains the most popular organized sport for boys, gymnastics for girls. This difference suggests that traditional club systems align better with boys' preferences and social dynamics. Girls, on the other hand, often seek alternative, informal ways to be active. Together, these patterns reveal a growing mismatch between how sport is currently offered and how young people wish to engage in them.

2.3.2. Infrastructure and Resource Challenges

European cities face multiple infrastructure-related challenges that hinder sport participation, including “aging grassroots sports infrastructure, underused public spaces, and a fundamental lack of adequate recreational areas” as persistent problems. These challenges are compounded by issues of social exclusion, economic decline, and environmental degradation in urban neighborhoods (URBACT, n.d.).

Financial constraints represent a significant barrier. The Dutch Sports Strategic Plan 2032 establishes that sports facilities should aim to be highly rated by users on accessibility, affordability, and sustainability (NOC*NSF, 2023). However, achieving these standards requires substantial additional financial investment and depends on the ability to demonstrate visible and measurable public value of sport to secure funding (NOC*NSF, 2023).

All Dutch municipal urban sports agendas recognize the need for dedicated funding through specific subsidy schemes, multi-departmental contributions, or public-private partnerships to realize their sport ambitions. They also express the need to move from ad-hoc infrastructure investments toward coherent, long-term planning, aiming to create future-proof, exercise-friendly environments as neighborhood meeting places, especially for youth.

The BVO Model framework highlights that effective sport environments require integration of three interconnected components: Hardware, Software, and Orgware. While the model emphasizes that “by integrating the three elements, municipalities and their partners can contribute to healthier residents, greater participation among vulnerable groups, and even strategic city marketing” (Hoyng & Scholte, 2021), it provides limited insight into how this integration occurs in practice. Tools such as the BVO Scan and implementation guidelines have been developed to operationalize the model, yet how municipalities effectively connect these three components, ensure balanced implementation, and navigate practical challenges remains something to be explored.

2.3.3. Barriers to Innovation and Change

Although sport organizations increasingly recognise the potential of technology, many continue to struggle with its effective implementation (Chelladurai, 2009). Persistent barriers include high costs, lengthy planning cycles, limited technological capacity, cultural resistance to change, and difficulties in assessing outcomes. This uncertainty stems from the complex ways technology intersects with sociocultural activities, where innovation is frequently constrained by limited resources, lack of strategic direction, and institutional inertia (Ratten, 2019).

Municipalities face broader governance challenges that limit the integration of sport innovation into urban policy. Dutch cities widely acknowledge that effective sport policy requires cross-domain collaboration - linking sport, culture, youth, health, spatial planning, education, welfare, and mobility. Yet there how to balance this effectively is yet to be explored.

When it comes to urban sports, for example, a key dilemma lies in balancing support and autonomy. Municipalities recognise the informal, do-it-yourself nature of urban sports culture and aim to nurture it without imposing excessive control. However, providing structure and resources while preserving creative freedom remains a persistent tension.

Structural and spatial inequalities continue to challenge the equitable development of sport infrastructure. For example, Panton and Walters (2019) describe stadium-centered regeneration projects as “Trojan horses” for gentrification. This highlighted the danger of some initiatives that claim to deliver community renewal, but often displace local residents and prioritize private interests instead.

Similarly, policies that frame sport as a driver of vitality or innovation risk overlooking issues of access, affordability, and cultural relevance. Without genuine and continuous community engagement, participatory processes can become procedural rather than transformative (SHARE 2.0, 2025). The Dutch Omgevingswet (2025) mandates public consultation and participation in spatial planning, but questions still remain about the required depth and authenticity of participation - whether it genuinely influences decision-making or merely fulfills administrative requirements.

2.4 Interim Conclusion

The review of innovation in sports has shown that the field has undergone a significant reorientation. Once focused on enhancing athletic performance and competitive advantage, sports innovation today aims to address broader societal challenges that include a decline in participation, spatial inequality, social disconnection, and worsening public health. This expansion is reflected in policy frameworks from European to municipal levels that increasingly position sport as an essential component in solving this.

The examination of sport's societal impact revealed that effectiveness depends on three interconnected dimensions: physical infrastructure (Hardware), programming and activation (Software), and governance structures (Orgware). The Omgevingswet and BVO model outline this integration, yet policy documents and municipal agendas exposed a persistent gap between ambition and execution. While participation and co-creation are universally promoted, practice remains predominantly top-down and infrastructure-focused. This results in weak coordination across sectors, and low genuine collective ownership.

The rise of urban and informal sports into the mainstream is particularly interesting, since these formats offer accessibility, flexibility, and cultural relevance that contrast with traditional club structures. More importantly, they are inherently community-centered - built on values of mutual support, peer learning, and collective ownership rather than top-down organization. Urban sport's transformative potential depends on authentic, long-term focused local engagement and makes them valuable reference points for exploring participatory approaches to sports innovation. Urban sports also operate at street level, where touch-points with users are direct and authentic, offering insights into what genuine co-creation can look like .

Barriers to innovation in public sports seem to be more operational rather than conceptual. Frameworks, ambitions, and evidence for sport's value exist in abundance. What remains unclear is how these translate into practice: how stakeholders navigate implementation realities, interpret policy within local contexts, and create conditions for genuine collaboration.

This chapter aimed to establish the contextual foundation for examining innovation in public sports by clarifying key definitions, mapping the policy landscape, and identifying where vision diverges from practice.

The next chapter moves from theory to practice, examining how actors across municipalities, foundations, and communities navigate these ambitions in the Dutch public sports landscape—and where opportunities emerge to make innovation more inclusive, collaborative, and responsive to local needs.

2.5 Key Takeaways from Chapter 2

- Shift in Innovation Focus: Sports innovation has expanded its goal beyond enhancing athletic performance to addressing broader societal challenges related to health, social cohesion, and inclusion.

- Policy and Practice Gap: European and Dutch policies consistently link sport with health and urban planning and emphasize participation and co-creation. However, there is a persistent gap between this ambition and execution, as practice remains predominantly top-down and infrastructure-focused, leading to fragmented implementation across sectors.

- Required Integration: The effectiveness of sports environments depends on the balanced integration of the Hardware, Software, and Orgware components defined in models like the BVO.

- Urban Sports as Reference: The rise of urban and informal sports (like 3x3 basketball and breakdancing) is significant because these formats offer accessibility, cultural relevance, and are inherently community-centered, built on collective ownership, making them valuable reference points for participatory approaches.

- Operational Barriers: The core barriers to innovation are organizational and operational rather than conceptual; the challenge lies in translating existing frameworks and policy ambitions into genuine collaboration in local contexts

Chapter 3

Exploring the Landscape of Dutch Public Sports

3.1 Expert Interviews (Round 1)

3.1.1. Purpose and participants

The purpose of the first round of interviews was to gain a deeper understanding of the challenges, opportunities, and governance dynamics shaping the public sport infrastructure in the Netherlands.

Participants were selected to represent a cross-section of the ecosystem *[See Figure 5]* from government officials, to Buurtsportcoaches (BSCs) and representatives from Sports Foundations. This mix ensured insights from those responsible for policy and facility development, as well as those directly involved in activation, community engagement, and programme delivery.

An overview of participants, their primary roles, and organizational affiliations and relevant topics discussed is presented in Table 2. In total, eleven (11) semi-structured interviews were conducted, with all of them being online except for one that was in person.

Participant	Organisation	Role	Key Topics Discussed
P 1	Municipality Amsterdam	Director of Urban Sports	Shared insights on community engagement, multi-purpose courts, and public-private partnerships
P 2	Sportbedrijf Rotterdam	Product Specialist	Discussed space optimization, facility usage, and club-focused activation
P 3	Sportbedrijf Arnhem	Manager Real Estate & Sustainability	Explored programming gaps, prioritization challenges, and usage metrics
P 4	3X3 Unites Foundation	Paperdome Project Lead	Provided perspectives on bottom-up activation and youth empowerment
P 5	Cruyff Foundation	Project Manager (Creating Space)	Spoke on inclusive design, safety, and long-term programming impact
P 6	PARC Griekspoor	Senior Project Manager	Explained challenges of engaging girls and integrating placemaking principles
P 7	WSDH Den Haag	Team Leader Streetsport	Shared practical challenges of programming, activating girls and multifunctional needs for street sports
P 8	Team Sportservice	Local Sports Coach (Buurtsportcoach)	Discussed community building, participation gaps, and flaws in stakeholder networks
P 9	Bergo Tiles	Co-innovator of LED flooring (Focus: Floor Tiles)	Explored measuring usage, data integration, and policy implications
P 10	TU Eindhoven	Sports Design Researcher and PhD Candidate	Provided perspectives on bottom-up activation and youth empowerment
P 11	LumenArt	Co-innovator of LED flooring (Focus: Lighting)	Discussed production challenges, testing different configurations and finding methods to collect insights to further innovate

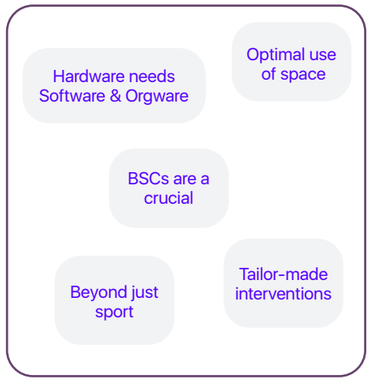
Table 2 : Expert Interviews Round 1

3.1.2. Key findings - Expert Interviews

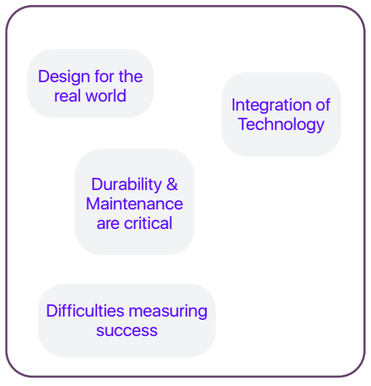
The interviews provided valuable insights into both the strengths and challenges present within the public sports landscape. The 16 key findings were subsequently clustered into 4 overarching themes that capture recurring patterns and perspectives across stakeholders.
An overview of these themes and corresponding insights is presented in Figure 12.

The following section elaborates on each theme in greater detail, integrating representative quotes from participants to illustrate and substantiate the findings.

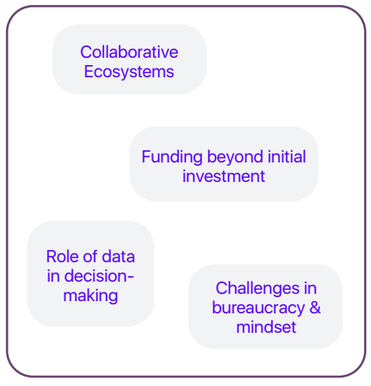
Theme 1: Community Engagement & Participation



Theme 2: Programming, Activation & Usage



Theme 3: Design, Innovation & Infrastructure



Theme 4: Partnerships, Funding & Sustainability

Figure 12: Overview of themes & key insights

Theme 1: Community Engagement & Participation

→ **Importance of involving community** - Successful projects emphasize involving the community from the outset to foster ownership and ensure relevance (P1, P4, P5). Understanding the perspectives of local residents ensures that projects are relevant and well-received. Similarly, some participants stressed building "from the bottom up not top down".

"Involving community is essential - it is a main part of how we operate as a foundation" - P4

However, despite this widespread acknowledgment of the importance of participation, the reality on the ground reveals a persistent contradiction. As one practitioner observed, "often times it's done the other way around - where they [municipality] decide that this and this should go here, this would be good for the youth to play etc - but that needs to change" (P4)

"If you want to connect the sport to the community - you need to speak to those who are part of it" - P1

→ **Understand community needs** - Identifying the specific wishes and needs of different community segments (e.g., youth, elderly, girls, people with disabilities) is vital for effective programming and facility design (P3, P4, P5, P7). This often involves direct engagement through interviews, local sports organizations, and community walks (P4, P5, P8).

→ **Ownership & Social Check** - Multiple stakeholders emphasized that participation from inception fundamentally alters the relationship between community and infrastructure: "important to implement the participation of the community from the start of the process - increases adoption and ownership of these courts" (P5). When communities feel ownership over facilities, it leads to increased respect, adoption, and reduced vandalism (P4, P5, P8). Investing in high-quality equipment and showing commitment can attract "serious people" and increase security (P1).

"If a community sees some hardware as their own - then they will take care of it" - P8

However, ownership is not a one-time achievement but an ongoing social process requiring sustained cultivation. The fragility of community connections was acknowledged: facilities are "people change, people move and you need to be out there to maintain the support" (P1). This suggests that successful facilities require not just initial participation but ongoing relationship management to maintain the social fabric that sustains usage and protection over time.

Theme 2: Programming, Activation & Usage

→ **Hardware needs Software and Orgware** - The mere presence of physical sports equipment (hardware) is insufficient; it requires active programming (software) and ongoing monitoring/ maintenance (orgware) to be effective (P3, P8). A striking consensus emerged that the presence or absence of organized programming overwhelms all other factors in determining facility utilization, with P2 stating "usage really depends on activation".

"They can see the usage of the [3x3 Basketball] floor isn't too great at the moment - not because of the product / equipment but because of a lack of programming" - P3

It was even suggested that hardware investments without corresponding programming commitments are essentially wasted resources, regardless of their innovative features or physical quality.

"[During the planning stage] if there is no talk about activation with BSC, then its best not to spend money on hardware because it simply won't get used by itself without activation or programming" - P8

→ **Optimal Use of Space** - Facilities, especially multi-purpose courts, should be designed and programmed for maximum utilization, including during off-peak hours (P2). When multi-purpose approaches are pursued, the focus is on maximizing versatility.

"When we place something, we look at multifunctional usage. Handball, Pickleball or Basketball - how many sports can be played on this?" - P2

Participants saw W&H Sport's LED courts innovation as an effective way to activate different sports groups at the same location and offer more options for BSCs than just "football" (P5). The lines and layout changes would be "useful for a professional and someone leading an activity" (P5). While multi-functional courts are valued for versatility (P1, P2, P3), some stakeholders prefer separate facilities to cater to multiple target groups simultaneously and avoid dominance by one sport.

However, there is some skepticism about whether this technology will drive organic multi-sport usage - "football is so popular that it to me it seems unlikely that any other sport would be played on those courts" (P5).

A critical finding was that location can override other factors when determining usage: "a court in the middle of the large city park - has no programming on that, although its the one that is used very often" (P3). This suggests that strategic placement may be more important than the sophistication of the innovation itself.

→ **Buurtsportcoaches (BSCs) are crucial**- Buurtsportcoaches (BSCs) beyond their main role of being sport coaches, were also seen as community leaders that are essential for understanding local dynamics, activating programs, and maintaining engagement (P3, P9).

"Buurtsportcoaches are key - they have a much better grasp of whats happening and have close contact with parents and kids" - P10

This embedded local knowledge positions BSCs as critical intelligence gatherers: "we get info about what the wishes and needs are for what type of sports from the BSCs who live in the area, for older and younger people" (P3). They also "decide when and where they will carry out the activities and for which target group" (P5). P10 underscored their importance to the point where it was suggested that "maybe the most efficient way [to get people active] is to hire buurtsportcoaches and training them and NOT investing on the infrastructure itself."

BSCs also function as essential bridges between institutional decision-makers and community members. They maintain "constant touch with [the users] to see how the [Cruyff] courts have done" (P5) and regularly "report back to the sports directors of those regions" (P3), facilitating the translation of community feedback into actionable insights.

"BSC can also play the role of maintaining the network of stakeholders, meeting once or twice a year to see how to improve things, get more people on board" - P8

"They see [BSCs] as the professionals who are in constant contact with these target groups and so the municipalities listen to them to serve the needs of these audiences" - P7

The impact of their absence further demonstrates their importance: "buurtsportcoaches getting assigned to areas that need more activation sees drop in activity in areas they used to work" (P10). This consistent pattern underscores their irreplaceable role in sustaining participation and maintaining continuity in community sport engagement.

From a broader perspective, the BSCs seem to be an important actor in addressing several systemic challenges identified in the literature [See Chapter 2]. Their interpersonal approach grounded in trust, continuity, and responsiveness, reveals a promising way to shift from top-down methods, toward more people-centered models of innovation in public sports.

→ **Tailor-made Interventions** - Activities should be adapted to the specific users and local context, considering demographics, interests, and even cultural sensitivities (P3, P7, P8). Programming decisions require understanding that "in the city you have richer parts, poorer parts, other kinds of children - it's a mix and all have their own unique needs" (P3).
Information gathering relies heavily on embedded local knowledge: "we get info about what the wishes and needs are for what type of sports from the BSC who live in the area, for both older and younger people" (P3), so determining "what those activities / sports are will be decided with people from the neighbourhood" (P5).

Cultural sensitivities emerged as particularly important. This creates design implications that extend beyond programming to spatial configuration. Even the initial location decision should consider demographics, "what kind of people, what kind of sports do they play, what are their local clubs" (P2).

"Certain groups [like Muslim women] do not want to sport outside, and if they do it should be in an environment where they are not in plain sight" - P8

The complexity of getting this right was acknowledged: "finding a good balance in programming seems to be important as well" (P3), suggesting that responsiveness to actual usage patterns requires ongoing adjustment rather than fixed schedules.

→ **Beyond Just Sport** - The goal extends beyond playing a specific sport to promoting general movement, fun, social skills, and community building.

"Playing is more important than choosing a sport. Our goal is to get people moving and having fun" - P3

Foundations explicitly structured their programs around holistic youth development: "through our activities we support the kids for not just movement, but also social skills, meet new faces, how to deal with little setbacks. Sports is a great way to do this" (P5).

In economically disadvantaged areas particularly, sports facilities function as more than just places to play. They become vital platforms for social cohesion and community building, with physical activity serving as the mechanism for broader social integration. The [Cruyff] courts were described as creating "feelings of safety for the children and the parents", becoming "a central space in the community where children, parents meet - they get to know more people and positive vibes" (P5).

Theme 3: Design, Innovation & Infrastructure

→ **Design for the real world**- Complexity without clear purpose creates barriers rather than opportunities. One coordinator observed that "the biggest reason hardware doesn't get used is because people don't know how to use it" (P8) and another warned that innovations "shouldn't interfere with the core functionality of the field (basic 3x3 or basic football)" (P10).

"The ASM courts have all these fancy colors and walls and ramps but no one knows how to use it (intuitively)" - P8

Design must also seek to accommodate diverse user groups. This includes accessibility for those with disabilities (e.g., wheelchair access) and audience appropriate infrastructure like "adjustable baskets that serve children and women, not just adult men" (P3). Even promising innovations face adoption barriers when value is unclear. "There is a value proposition that is incredibly difficult to get right" (P10). Critical questions remain: "Who is going to promote it to the final user? Who is the messenger?" (P9). This means that success requires demonstrating sustained impact beyond initial novelty:

"You need a way of introducing and getting people familiar with it, but then you need to show that it is a sustained use case. If you get usage initially and then experience drop off in use, then the value prop to municipalities is useless" - P10

→ **Durability & Maintenance are critical** - Innovations must be "break (vandal) proof" and have clear plans for long-term maintenance and repair (P1, P3, P5, P10). The failure of early court installations with technology due to lack of maintenance support highlights this.

We were one of the 'first adapters' of LED indoor courts and now we have the problem that the company that installed it, doesn't exist anymore - so no maintenance or repairs can be done" - P3

These failures underscore that "investment into systems to support the innovation are extremely important (such as the app to control it or making it thunder and lightning proof)(P10).

All kinds of complexities in tech need to be throughly tried and tested in the field when designing public systems" - P10

Maintenance responsibilities and capabilities must be clearly established upfront. Questions emerged about component lifespan mismatches: " the flooring might have longer lifetime than LED strips - how do you replace and repair the tile? Does this affect the look and feel of the entire court?" (P9).

Installation complexity also poses barriers: “how does this look like for installation professionals, that do not have the experience of installing tiles with LEDs?” (P9). Some Sportbedrijven “do the maintenance and servicing of sports facilities themselves, or outsource them to contractors” to ensure facilities remain “schoon, heel and veilig [clean, whole and safe]”(P3).

These failures highlight that durability and maintenance must be part of the core design constraints. For outdoor public space innovations like LED tiles, vandal-proofing, weather resistance, and ease of maintenance must inform design from the beginning. Technical sophistication without proven durability and long-term vendor support leads to costly failures.

→ **Integration of Technology** - Interactive elements and LED lighting are seen as promising for enhancing user experience and activating different sports (P7, P8). However, technical complexities and long-term viability need careful consideration (P9, P10).

“LED courts are an amazing idea - they fit the new ideas of the “next generation playground” - P7

One coordinator believed “the LED floor can be useful to get people moving more than they are currently moving” (P8). Another noted that “interactive equipment can do really well in public spaces, especially with the sports we offer (street sports) - LED courts would elevate that experience” (P7). Beyond general activation, specific benefits emerged for different user groups. Adjustable lighting could provide “a great added improvement for the physical and social safety feeling of girls” (P6). The ability to change the layout and LED interactions would be “interesting for professionals helping target audiences, like kids with special needs or wheelchair users (P5).

“Gamification is very interesting for the public space - stimulate kids to move in different ways” - P5

However, critical questions about implementation remained unresolved: “who is controlling it? Who has access?” (P10). There is clear interest in the innovation, but significant exploration and testing are needed before it can be confidently deployed at scale.

→ **Difficulties measuring success** - An interesting gap emerged around success measurement, with stakeholders often unable to articulate clear success metrics or evaluation frameworks.

“I was flabbergasted when I asked them what they aim to achieve and how do they measure success - they said ‘we don’t know’” - P10

Even for targeted interventions, it is “difficult to measure how many girls we are able to activate successfully so being able to measure that is key”(P6).

“We want to know what the influence is of the Urban Dance Ground (UDG) on the participation of girls and we don’t have that data yet” - P6

While simple success metrics like costs divided by the amount of users exist, P10 questioned whether this approach is sufficient, suggesting the real question should be: “are they contributing to your societal goals?” (P10). Another coordinator argued that beyond simple headcounts, the key questions should be “is the right group of people making use of the space - so if it’s for girls are girls using it?”

“How many stakeholders do we have that are claiming to make a connection to a place - who feel the ownership - and even if that number is low, if they are feeling connected to the space then isn’t that a success?” - P8

Technology-enabled measurement offers potential solutions: “we have a few playgrounds which use a radar system to track how many people and when are they using the facilities in real time” (P3), though one can imagine this can raise concerns about costs and privacy.

Success metrics must be defined at the outset, not retrofitted afterward. Without clear measures established upfront, learning becomes impossible and decisions default to anecdote over evidence.

Theme 4: Partnerships, Funding & Sustainability

→ **Collaborative Ecosystems** - Effective projects involve strong partnerships between municipalities, sports companies, foundations, local clubs, and community stakeholders (P1, P3, P4, P5). These partnerships offer strategic advantages beyond simple procurement. "[Sport] foundations are in partnerships with [commercial] companies to bring social return, so it would be beneficial for Gemeentes [Municipalities] to also work more closely with them (P1).

"Normally they need to write down tenders for these projects, to give everyone a fair chance. But if connected to foundations, there is a greater chance to win tenders and do innovation" - P1

Successful partnerships require more than strategic positioning - they also need value alignment and long-term commitment. "The most important for Sportbedrijf Arnhem when going to invest in new sports facilities is a partnership. We want to work with partners that think in the same way and have the same goal - not one that just sells something and then doesn't play any further role" (P3).

In practice, sports foundations position themselves as ecosystem coordinators rather than standalone operators, viewing facilities as means to broader social goals.

"The Cruyff Courts are catalysts for change - we see ourselves as a sports team working together to decide what kind of activities should happen, when and where" - P5

At the neighborhood level, "organisations in the neighbourhood work together to use the space. We think - do you need a place? What can we provide? And so we try to find each other" (P4). Clear role division enables effective collaboration: "municipality takes care of the physical aspects of the Paperdome, 3X3 Unites does programming, alongside collaboration with the BSCs, Wijkagents, other local stakeholders, to overcome challenges" (P4).

Successful public sports innovation can emerge from collaborative ecosystems where partners share values, commit to long-term engagement, and have clear role division. Strategic partnerships can make sure that everyone works more closely together towards a common goal.

→ **Challenges in bureaucracy & mindset**- Bureaucracy within municipalities and resistance to traditional solutions can hinder innovation and effective community engagement. Procurement processes create structural barriers. "They [partners] all have preferred suppliers - with certain requirements, styling and branding, and the municipality has their own preferred suppliers - so they often have to negotiate" (P10). Other participants mentioned how this comes in the way of their work; "sometimes working with the municipality bureaucracy makes it hard to reach target audiences (like girls)" (P6).

"The greater challenge is that too little is happening in society - [they] tend to fall back on traditional solutions, year after year and brings no change" - P9

The goal is to show that things can be done differently. Many want to change the mindset and behaviour, but being in a "niche market is difficult to make this happen" (P9). This resistance to change also occurs at the resident level.

"Locals / residents mindset change is extremely important and difficult to change" - P5

Timing of stakeholder involvement reflects broader participation challenges. One coordinator noted that most times municipalities come to them at the end of a project and say equipment isn't being used. They mention that their "biggest challenge is not to be on the back of the project, but on the front of the project - which means I can best help the municipality with decisions before hardware is put in place" (P8).

"My biggest challenge is participation - how can we connect people from the front end, how can we give them a 'vote'" - P8

→ **Funding beyond initial investment** - Municipalities often focus on initial hardware costs, but there's a critical need to also budget for ongoing activation, programming, and long-term maintenance (P1, P5, P8). One coordinator observed that municipalities "are always talking about the money - how to put in maintenance plans for the next 5 years etc - but its not only maintenance, you also should budget for activation and programming" (P8). The time frame for activation funding is also critical. Short-term commitments are often seen insufficient; "I would rather do 1 year instead of 10 weeks" (P8).

"Push for the activation budget as well and run the risk of losing the tender - that is better than wasting resources on a court that won't see any usage" - P8

Long-term sustainability also faces institutional challenges: "tight budgets, contact points [within the municipality] change, and we struggle with getting people on board to make sure things are maintained and updated" (P5). Funding allocation decisions are increasingly tied to demonstrated impact, with "if a certain health grade [of the public] falls below a certain number, area gets more funding per inhabitant" while "more active neighbourhoods get less funding for initiatives,"

A good suggestion in order to build confidence in sustained investment, was that stakeholders need to "break down the costs and expenses to show that there is a continued, prolonged interest in the project" (P1).

→ **Role of data in decision-making** - Whilst a challenging task, collecting data on usage and impact is important for justifying investments, securing funding, and demonstrating success to stakeholders (P3, P6, P10).

"Foundation wanted to show that there is activity going on, municipalities wanted to know if their fields are in use" - P10

However, the purpose of data extends beyond simple validation. "You don't want to just talk to some people and get a sugar coated story about how cool it is - you want to collect data that enables you to see - is it being used without us being there to promote it actively" (P10).

A mixed-methods approach emerged as optimal: "mixed methods / data enabled design might be the way to go. Use data with stakeholder input from the ground" then "use the data observations to also ask for more suggestion, get multiple perspectives to integrate the findings into some kind of recommendations" (P10).

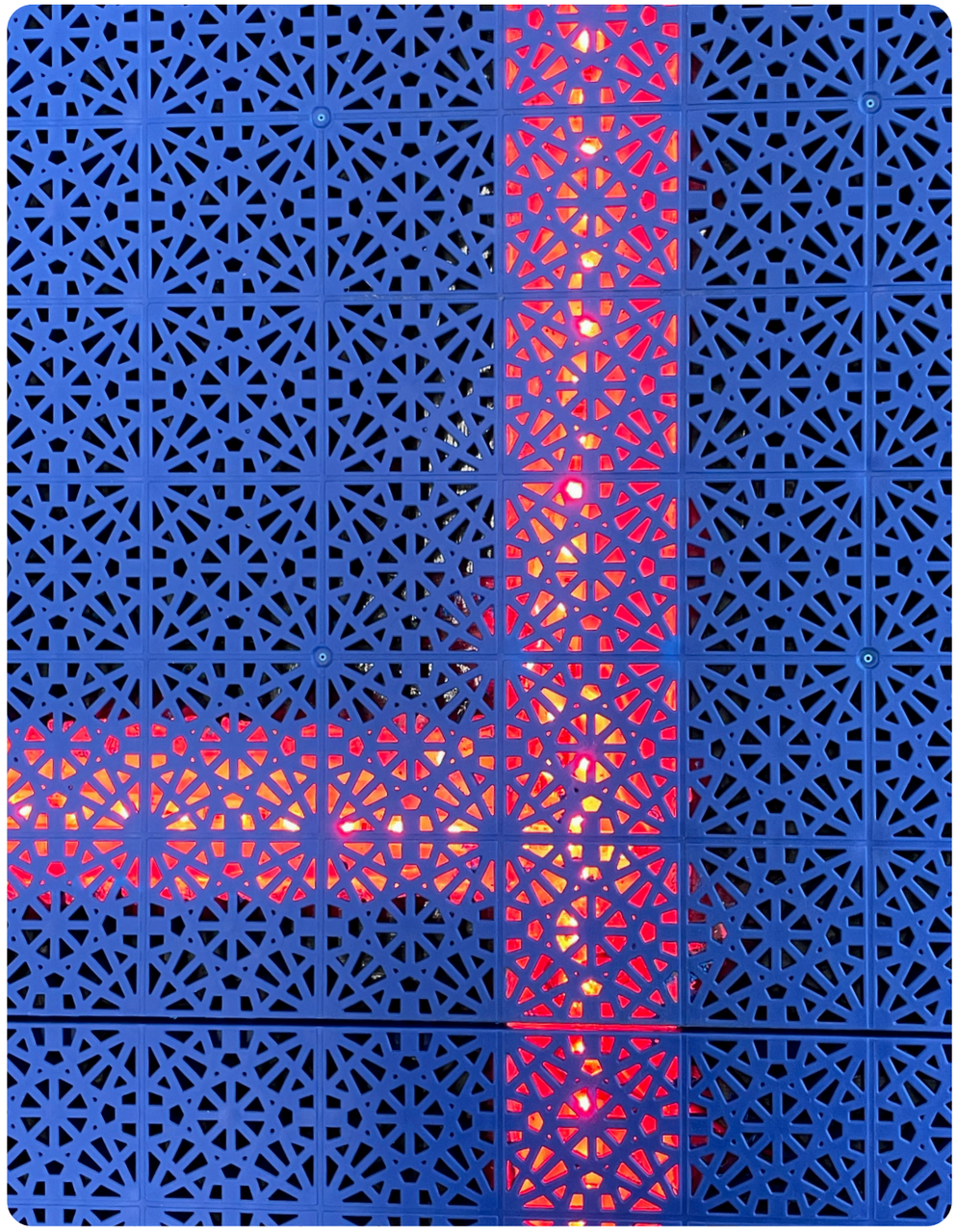


Figure 3A - LED Flooring

3.2 Probes

3.2.1. Generative session with Paperdome Core Team

To gain direct user insights into public sports behaviors and needs, a generative session was conducted with the Paperdome Core Team. The Core Team consists of a group of youth from the surrounding neighborhood in Amsterdam Zuid-Oost, who advise on the strategic direction of the Paperdome sports facility.

Goal - To understand the behavioral and social dimensions of urban sports participation, including pre- and post-activity rituals, motivational factors, and user needs for future facility development. The session also sought initial user reactions to the LED floor innovation.

Method - The session employed the "Path of Expression" framework (Sanders & Stappers, 2019) to explore participants' past, present, and future experiences with urban sports through three structured worksheets (see Appendix B). Five Participants, comprising four basketball players and one skateboarder, completed the activities online. This was followed by a discussion of preliminary impressions of W&H Sports' LED floor technology.

3.2.2. Key findings - Probes

→ **Rich social rituals** - Urban sports activity is embedded within extensive pre- and post-game social practices. Social interaction - catching up, connecting with others, meeting new people and listening to music - is as central as playing the sport itself. Post-activity rituals include discussing the game, planning future sessions, and physical recovery.

→ **Community and belonging drive participation** - Participants identified social connection as the primary motivator for engagement. Key drivers included being with friends, making new connections, and forming deeper interpersonal bonds. One participant articulated the desire for "dedicated [sporting] communities and some way to create an ecosystem to always have homies skating with you." Participants also noted that urban sports involve a broader lifestyle culture encompassing "hip hop, Jordans, fashion," suggesting that facility design could benefit from acknowledging these cultural dimensions and creating spaces where these elements are embraced.

→ **Facility aspirations extend beyond sports** - Participants expressed desire for more accessible facilities, particularly beginner-friendly spaces and indoor venues with open public access. For the Paperdome specifically, new ideas for the space centered on three categories:

1. Spatial flexibility - through modular equipment and convertible layouts (e.g., "turn it into a skate park one day in the week").

2. Enhanced training equipment - including basketball rebounders, adjustable hoops, LED floors with interactive exercises built in, and strength training equipment.

3. Social infrastructure - including seating for spectators, audio speaker systems, Wi-Fi, scoreboards, and aesthetic elements such as inspirational quotes.

Key Takeaways from the Session - These findings underscore that urban sports facilities should aim to address social and cultural values alongside athletic functionality. The emphasis on community infrastructure indicates that innovations like LED floors may be most valuable when they complement social programming rather than simply offering technical novelty.

This process also revealed that participatory techniques offer a promising approach for understanding the true needs and values of those who use these spaces, grounding decisions in lived experience rather than assumptions.

3.3 Field Notes

During the course of my research, I also decided to attend some sporting events, seminars and demonstration (demo) days to experience first hand how things are done on the ground. Observations and insights from these events would eventually form my "Field Notes" which are presented in the following sub-chapter.

The notes have a more reflective, informal style - since they are observations I made as I was getting acquainted with the context. The insights from these events would help me fine tune my designs and strategy later.

Field Notes

Demo Day Lumen Art

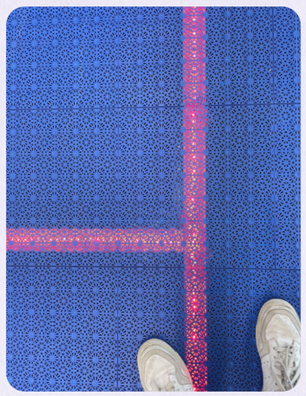
This was a very commercial meetup of co-innovation partners (W&H Sports, Smartgoals B.V., Bergo Tiles) and other industry guests. It had more of a "bling bling" feeling but showed a lot of promise for the future of tech in sports. There were some impressive demos of working floor prototypes with interactive sports solutions, and that was great to see.

However, there was also quite a bit of business and sales-oriented speak: "Great innovation – but how can I sell this to someone?"

The atmosphere between the co-innovation partners was interesting – it seemed that they were aligned on the vision, but unsure about the execution. When it comes to technology, most partners want to play it safe, rather than explore what might be better for the users themselves. A lot of decisions seem to be made based on business and financial viability, and lots of user-based testing was assumed rather than conducted.

As a designer, the alarm bells were going off when design and interaction choices were being discussed without any talk about user testing or co-creating with users to find out what might work best. This gave me more reason to really push W&H Sports to host some co-creation sessions with these target audiences later.

There were many questions from attendees about the technical feasibility, maintenance and repairs, waterproofing, and vandal-proofing of the LED tiles. While the general atmosphere was positive, there was some skepticism around some of the innovations too.



There was an interesting presentation from InFit, a gym-hall architect agency, who are working to change the rhetoric on with their modern gyms and fresh perspectives on what should constitute the "elementary school gym" This led me to interview them later to find out their perspective on changing mindsets in sports.

Field Notes

BeweegAlliantie Movement Festival

Beweegalliantie describes itself as a national network with the mission to get more people in the Netherlands moving—across all age groups. The organisation collaborates closely with the Dutch Ministry of Health, Welfare and Sport and maintains an extensive network of partners, experts, and foundations that advise on movement and sport.

I attended their Movement Festival in June, which featured several seminars and workshops. One seminar brought together three members of parliament (from NSC, PvdA, and VVD) to discuss the future of policy, political dynamics, and lobbying in sport. Their conversation focused on the parliament's role in shaping sport policy, particularly its influence on municipalities in implementing structureel beweegonderwijs (formal physical education) in primary schools and in designing initiatives to reach so-called "vulnerable" groups through sport.

There was a lot of talk about how the Netherlands has a big a "sporting culture" and that we are a proud "sporting nation" – which was interesting because the goal of most of the attendees was to find ways to make people move more!

It was refreshing to hear one politician advocate for "bottom-up innovation," explaining that the new Sport- en Beweegwet (Sports and Movement Act) was in development and inviting attendees to contribute ideas, examples, and proposals. The politicians appeared genuinely engaged and approachable, interacting with participants as peers rather than distant officials. It made me reflect on how this openness contrasted sharply with my own experience so far, where stakeholders often complained about having to navigate complex layers of bureaucracy in practice. It made me think: if there is so much passion for change, why do these words so rarely translate into action in the field?

Discussions on future plans focused on how sport could contribute to broader social impact, with government officials expressing that they were "seriously looking into the potential" of multi-functional sport facilities. That was a "bingo!" moment for me, as W&H Sport's LED courts are designed precisely for multi-functional, multi-sport environments. It made me realise how closely the innovations we are developing align with the government's strategic direction - especially since these policymakers will eventually advise local municipalities on sport infrastructure.

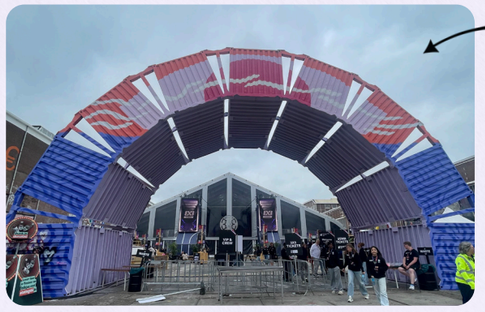
Another session explored the relationship between movement, mental health, and building resilience as a society. Speakers noted that the Netherlands is known for being a sitting culture and that we need to find new ways to encourage movement. There were also discussions on how to stimulate children to be more active, as outdoor play among youth has declined sharply, leading to what one speaker described as "cognitive drain."

It left me wondering - maybe interactive outdoor sporting facilities can fix that?

Field Notes

Urban Sports Week Amsterdam

The centrepiece of USWA was the FIBA World Masters 3x3 Basketball tournament, hosted by 3X3 Unites at NDSM Wharf, which served as the main event of the weekend and drew significant crowds. I also attended surrounding events at the venue featuring BMX biking, rollerblading, skateboarding, parkour, and breakdance.



The atmosphere at the NDSM location - a former industrial shipping wharf - immediately revealed how urban sports events function as cultural crossroads where street art, music, and movement converge. The post-industrial setting, with its shipping container entrance, amplified this vibe, whilst bringing people of different sporting interests, backgrounds, ages, and skill levels together.

The 3x3 basketball tournament gave a glimpse into how technology is reshaping our sports experiences. The event mixed live entertainment with competition - professional DJs and MCs kept energy high, loudness meters got crowds competing, and drones captured aerial footage. Spectacular lighting and sound systems transformed the basketball court into an immersive performance venue.

Between matches, organizers kept fans engaged with giveaways and contests, while a dunk competition gave athletes another way to connect with the crowd. This immediately sparked ideas for W&H Sport's LED Courts—imagine different sections lighting up or changing color based on the activity, or programming event-specific interactions directly into the court surface! How cool would that be?!

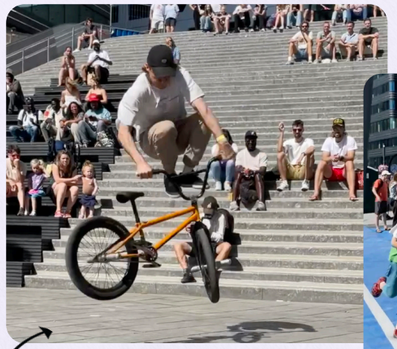
OMG! WORTHY DE JONG!

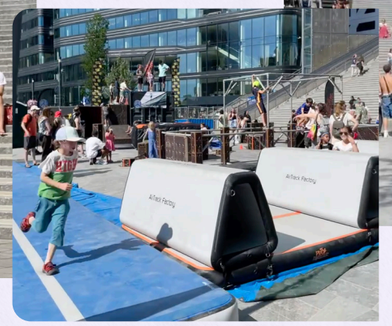
I also participated in the "Youth Empowerment Conference", attending workshops on entrepreneurship, gender equality, and mental health. There was also a panel discussion featuring athletes like Worthy de Jong. The conference brought together young people from different countries and all walks of life—staying true to the mission of sports to inspire and educate beyond physical activity.

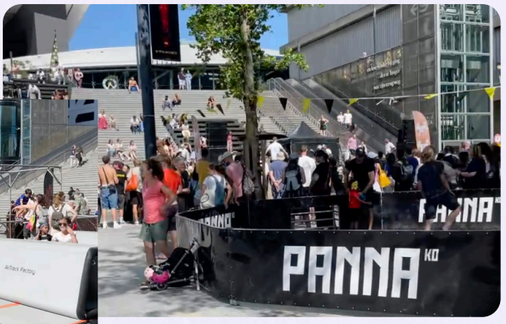
Field Notes

"Off The Tracks" Urban Festival Utrecht

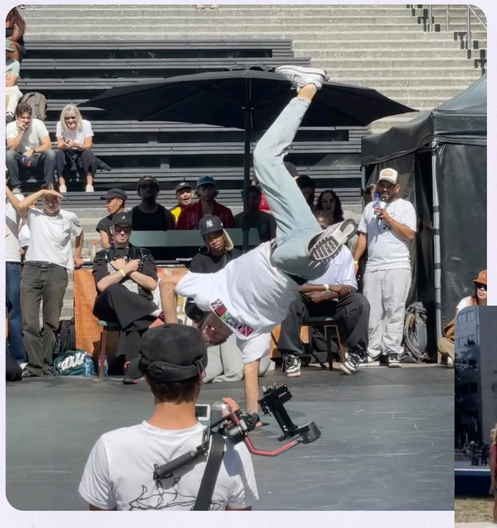
This free summer festival at Jaarbeursplein near Utrecht Central Station brought urban sports to everyone. The relaxed atmosphere, enhanced by music and movement, made it easy for anyone to jump in and participate. Visitors could try Panna football, slacklining, rollerblading, skateboarding, and gymnastics without any prior experience or registration.







The event had it all; market stalls selling sneakers and clothing, food truck vendors and fun activites for families and kids - creating this genuine urban vibe. Everyone seemed to be having a good time, and even though there were some professional contests, the main activities were set up in simple formats for people to try new things, and express themselves however they wanted.



These observations showed me how urban sports can function as accessible entry points to get people moving, whilst also being cultural hubs where diverse communities can interact. It is clear that it's not just about doing the sport itself - it's also about enriching the surrounding spaces that bring together people who might never interact otherwise.

In talking to some parents, the same theme kept coming up: how can we get our kids and young people of this generation to move in ways that also allows them to be themselves?

So technology might indeed play a role - using an app or filming a TikTok for example - but the core should still be about physical movement, having fun and self-expression.

3.4. Synthesis of Research Insights

3.4.1. Key findings per Research Question

This section maps key findings from the research phase onto the initial research questions, establishing the foundation for subsequent solution-oriented outcomes.

RQ1: How can sports equipment suppliers, like W&H Sports, enhance the societal and market impact of their innovations by co-innovating with stakeholders and the built environment through design-led approaches?

- **Co-innovation as competitive strategy** - Literature, field research, and stakeholder interviews consistently demonstrate that innovation and design must center on actual user experiences rather than business assumptions. Sports equipment suppliers could strengthen their market position by functioning as strategic facilitators within stakeholder networks. This would reposition suppliers from commercial vendors to long-term partners committed to community outcomes. Initial probes also revealed that understanding users' broader needs and goals could enable suppliers to leverage their wider product portfolios to create complete, integrated packages that address authentic user requirements rather than assumed ones.

- **The promise and pitfalls of technology** - Multiple stakeholders expressed great enthusiasm and interest in interactive technologies such as LED courts, valuing them for multi-sport activation, gamification potential, and enhanced safety through improved lighting. However, field observations reveal tensions between technological capability and practical implementation. Successful integration of technology should aim to enhance the sporting experience rather than interfere with basic activities. This requires robust, vandal-proof products designed for the environments in which they'll be used in, supported by comprehensive service and maintenance strategies to ensure long-term viability.

- **Policy alignment as strategic positioning** - Findings demonstrate significant potential for suppliers to align innovation processes with government priorities. Currently there is strong interest in multi-sport facilities, community participation and creating social impact through sport. Framing innovations as policy-relevant solutions could strengthen supplier partnerships with municipalities and deliver community-centered outcomes, and differentiate their position in the market. This alignment requires navigating power dynamics effectively. Stakeholder mapping revealed that municipalities and policymakers hold high power while end users maintain strong interest but limited influence. So suppliers have the opportunity to bridge these gaps through collaboration and amplify community voices in decision-making. This ensures that innovations meet both policy goals and end-user needs.

RQ2: What systemic frictions prevent effective collaboration between sports equipment suppliers, municipalities, and communities in public sports infrastructure development?

- **Siloed stakeholder perspectives and fragmented priorities -** Different actors frequently operate within their own domains. Municipalities focus on hardware, suppliers on product specifications, and community-facing partners on programming needs. This siloed thinking leads to fragmented priorities, where municipalities prioritize capital expenditure while critically underfunding activation and programming components. This prevents integrated planning where hardware, software, and long-term sustainability are considered together from project inception, creating facilities that exist physically but lack resources for community engagement.

- **Top-down processes** - Municipalities frequently determine facility locations and equipment specifications without genuine community consultation, relying instead on demographic data and traditional approaches that miss actual usage patterns and needs. Critical actors like Buurtsportcoaches are seemingly engaged post-construction, forcing them to activate facilities that may not serve the actual needs of the community.

- **Communication and procurement barriers** - Lack of clarity about facility access, usage, and intended audiences leaves facilities underutilized. Preferred supplier relationships, branding requirements, and partner preferences create complexities in negotiations. A gap persists between policy rhetoric promoting bottom-up innovation and its implementation in actual practice.

RQ3: Why are end users excluded from sports infrastructure decision-making processes, and what are the consequences for innovation adoption and community ownership?

- **Resource constraints** - End user exclusion stems from resource constraints and traditional decision-making approaches. Municipalities operate with limited personnel for community engagement, making sustained research challenging. This combined with top-down traditions where solutions are chosen rather than co-developed from project inception.

- **A vicious cycle** - Exclusion reinforces the cycle of failure. Without early involvement, facilities experience reduced adoption and ownership, contributing to low usage numbers. Even well-designed facilities suffer from inadequate usage without effective programming and user engagement. One-size-fits-all approaches exclude marginalized groups, and weakens support and trust for these projects, particularly as urban demographics diversify. Exclusion could also prevent the emergence of community ambassadors who, if involved early, would naturally promote facilities, encourage participation, and protect spaces through ownership.

RQ4: How can sports equipment suppliers use participatory design methods to meaningfully engage with communities and stakeholders throughout the innovation process?

→ **Methodological approaches** - Meaningful community involvement requires systematic collaboration and user testing to ensure design choices emerge from authentic user input rather than business assumptions. Participatory methods like generative probing sessions uncovered broader community rituals, social dynamics, motivations, and aspirations prior to equipment-specific decisions. These approaches should adapt to diverse community needs, especially when trying to appeal to specific demographic groups.

→ **Critical intermediaries** - Buurtsportcoaches function as essential bridges between residents and municipalities. Their contact with the community and comprehensive knowledge of local needs across sports and age groups position them as valuable partners for sustained engagement.

→ **Scope for development** - The depth of participatory design application in this thesis remains to be explored. While literature and initial probes highlight promising methods, subsequent chapters further investigate the practical application of these approaches.

RQ5: What new roles and capabilities must sports equipment suppliers develop to function as strategic facilitators rather than traditional vendors in public sports infrastructure projects?

→ **Ecosystem growth and coordination** - Convening stakeholders like sports clubs, schools, healthcare providers, and social organizations to co-create with communities. Providing credible outcomes would reinforces suppliers' roles as strategic partners, and allow new partnerships to form with actors sharing similar values and goals.

→ **Proactive Involvement** - Proactive involvement - Early engagement with municipalities and communities at project inception. This requires capabilities in community research, cultural sensitivity, and adaptive design processes that respond to diverse user needs. Suppliers can use data and user experiences to demonstrate innovation effectiveness and inform iterative improvements.

→ **Long term thinking** -Life-cycle thinking throughout design and operation stages, encompassing vandal-proof design, obsolescence planning, environmental resilience (waterproofing, wear resistance, lightning protection), and robust maintenance and service strategies to ensure long-term functionality.

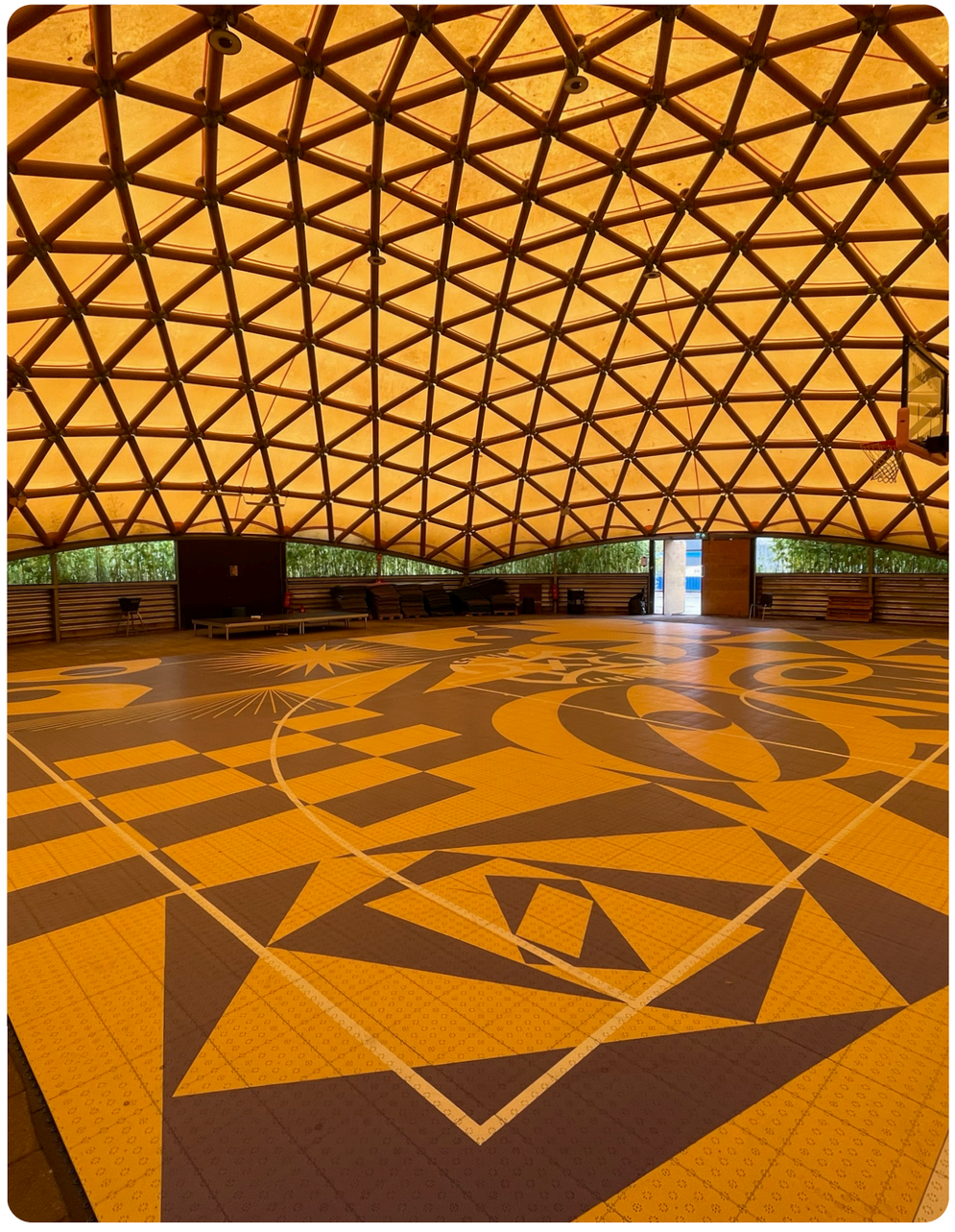


Figure 3B - Indoor Flooring at Paperdome, Amsterdam

3.5 Systemic Problem Tree

I created a problem tree [Figure 13] to map the causes and effects around the core problem (Veselý 2008):

"Public sport facilities in the Netherlands often fail to achieve sustained participation and community value because their design, implementation, and activation are fragmented, exclusionary, and short-term"

The roots of the tree reveal underlying causes—institutional, financial, social, and knowledge gaps. These include absent activation strategies, top-down decision-making, coordination failures, lack of genuine collaboration, and missing feedback mechanisms.

The leaves show the effects branching upward from the problem. Immediately, facilities become underused, programming remains inadequate, community ownership stays weak, equity gaps persist, and opportunities for impact are missed.

Over time, these effects grow into wider consequences: participation drops, long-term adoption fails, gaps widen between policy ambition and ground-level practice, and distrust grows in both innovation and public investment.

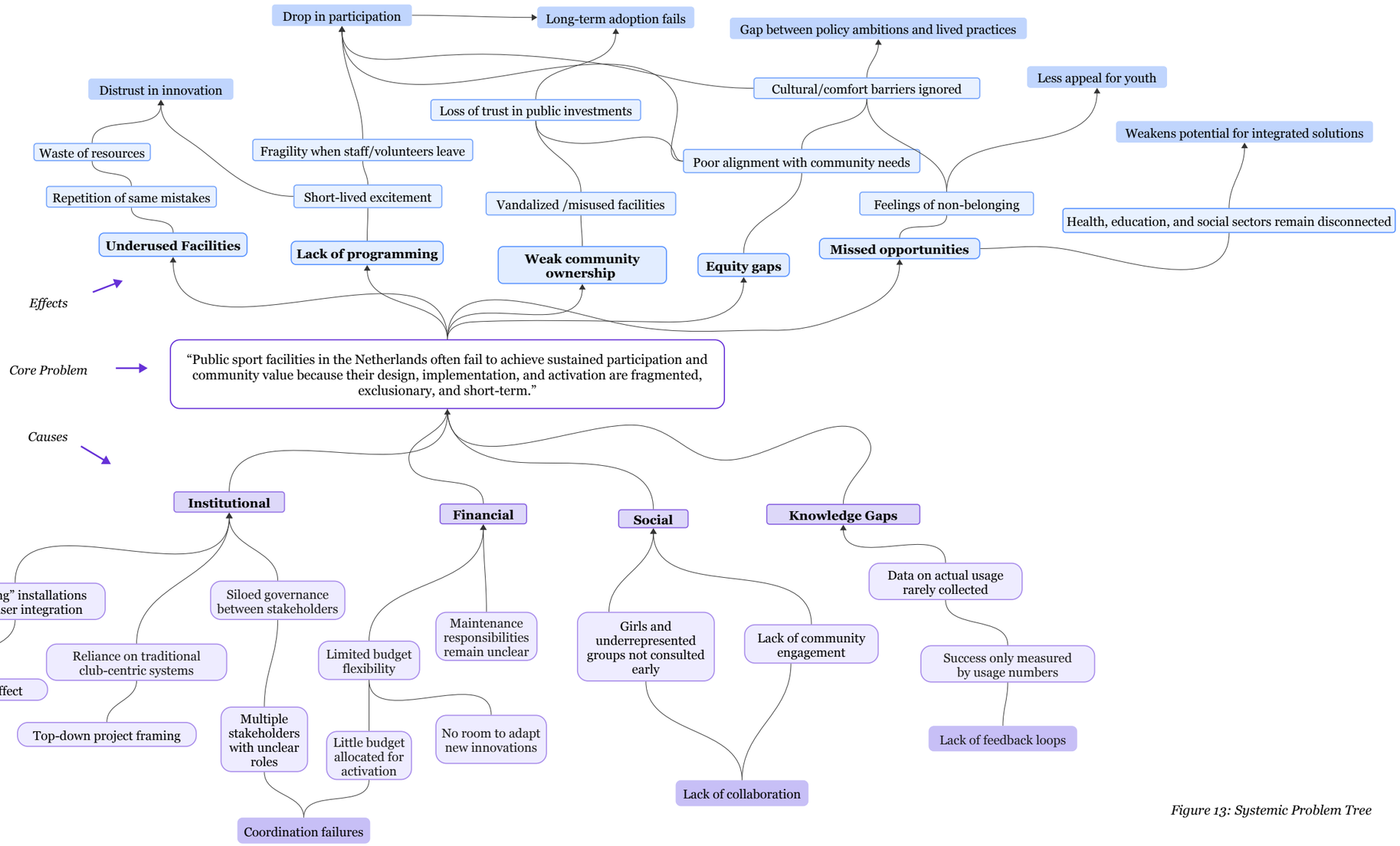


Figure 13: Systemic Problem Tree

3.6 Interim Conclusion

This chapter's findings reveal a complex and often contradictory landscape in the governance and implementation of public sport infrastructure in the Netherlands. While enthusiasm for innovation is high, systemic frictions consistently undermine efforts to create sustainable, user-centered facilities.

The insights presented in this chapter are derived from a triangulated research approach, blending qualitative data from 11 expert interviews, generative user sessions (probes), and contextual field notes. This revealed a fundamental divide in how innovation in the public sports arena is perceived. Technological interest exists for "next generation playground" concepts like interactive LED courts, yet a prevailing counter-view argues that the primary challenge is not technological but organizational and programmatic. Hardware requires corresponding Software (activation/programming) and Orgware (monitoring/maintenance) to be effective. Without this commitment, even sophisticated technology becomes wasted investment.

Some critical barriers to innovation also emerged like prioritizing funding for hardware while systematically underfunding long-term programming and maintenance. Durability and maintenance requirements for outdoor public installations remain underestimated, with technical risks often surfacing only after implementation. Lastly, top-down decision-making processes exclude end users and critical intermediaries like Buurtsportcoaches, resulting in facilities built on assumptions rather than authentic needs. This creates a vicious cycle: reduced ownership, low adoption, and declining usage. It shows that innovation in Dutch public sports fails not from lack of technological capability or policy ambition, but from disconnects in how stakeholders interpret priorities, allocate resources, and structure decision-making processes.

At the same time, these gaps also reveal opportunities for sports equipment suppliers willing to reposition their role. Rather than functioning as transactional vendors, suppliers can become strategic facilitators - advocating for integrated planning, building partnerships with foundations and community organizations, and demonstrating long-term value through evidence and sustained engagement.

This chapter established the practical realities of sports innovation implementation by examining how different actors navigate the gap between policy vision and ground-level execution. The findings identified where systemic frictions prevent effective collaboration and where opportunities exist for design-led interventions that bridge institutional capacity with community autonomy.

To address these challenges systematically, a problem tree was made that maps the underlying systemic issues that generate these frictions—tracing root causes and knock on effects. The next chapter looks to identify possible leverage points where design interventions can create meaningful change in how public sports innovation is conceived, developed, and sustained.

3.7 Key Takeaways from Chapter 2

- Organizational Over Technical Challenge: Research confirmed that the primary challenge is not technological complexity but organizational and programmatic. There is a striking consensus that simply providing physical sports equipment (Hardware) is insufficient; it requires active programming (Software) and ongoing monitoring/maintenance (Orgware) to be effective.

- Crucial Intermediaries: Buurtsportcoaches (BSCs) are vital actors, functioning as community leaders and essential bridges between institutional decision-makers and residents, possessing critical local knowledge for activation and engagement.

- Ownership and Adoption: Stakeholders stressed that implementing community participation from the start fundamentally increases adoption, fosters ownership, and reduces vandalism.

- Systemic Frictions: Collaboration is fragmented because stakeholders operate in silos (e.g., municipalities focus on capital expenditure, neglecting activation funding), and processes are frequently top-down, engaging critical actors like BSCs only after construction is complete.

- User Insights (Probes): Generative sessions with youth revealed that urban sports participation is driven equally by rich social rituals (connecting, listening to music) as by the physical activity itself; therefore, facilities need social infrastructure (seating, Wi-Fi, audio systems).

Chapter 4

Designing the Game Plan

4.1 The Design Challenge

At the start of this project, the goal was to explore how sports equipment suppliers, such as W&H Sports, could strengthen their position in the Dutch public sports sector by developing innovative products to improve the quality of public sports infrastructure. The initial assumption was that success would largely depend on the technical performance and appeal of their LED court innovation, supported by effective market positioning and communication strategies.

However, the research findings presented in Chapters 2 and 3 has significantly re-framed this understanding. While interactive technologies such as LED courts demonstrate clear potential for new forms of play and movement, multi-sport activation, and gamification, the factors limiting their broader societal and market impact are rooted in how the Dutch public sports system operates in practice.

These insights have therefore shifted the project's scope from improving a single product toward enabling design-led co-innovation within the public sports ecosystem. The design challenge can therefore be defined as:

How might we design an innovation framework that enables sports equipment suppliers to contribute to long-term, inclusive, and sustainable change within the Dutch public sports system?

This requires suppliers to engage earlier in decision-making processes and collaborate directly with municipalities, foundations, and communities, helping to bridge the disconnect between policy ambition and local implementation. By repositioning themselves as strategic partners suppliers like W&H Sports can drive meaningful change in public sports while simultaneously strengthening their market position through demonstrated public value creation and user-centered outcomes.

4.1.1. Gaps in knowledge

To translate this approach into actionable design, the following themes that emerged required deeper investigation:

Participatory Design in Public Contexts – What participatory methods are Dutch municipalities currently using in public sports projects? How effective are these approaches, and what challenges or best practices have emerged from their implementation?

Learning from Practice – What are municipalities, organizations, and local initiatives already doing differently, and what lessons can be drawn from their approaches?

Activating Underrepresented Groups – What strategies and environmental conditions encourage participation among girls, women, and youth who currently avoid or feel excluded from public sports spaces?

Technology as Enabler - How can emerging digital tools improve participatory processes in public sports? What role might technology play in capturing and amplifying community voices, particularly from groups underrepresented in traditional consultation methods?

To address these questions, I conducted a second round of expert interviews with practitioners working directly in these areas. These conversations are detailed in Chapter 4.2 and provide the foundation for the design interventions developed in the next phase.

4.2 Expert Interviews (Round 2)

4.2.1. Purpose and participants

To address the knowledge gaps identified in Chapter 4.1.1, I conducted a second round of expert interviews. These online, semi-structured conversations with 10 experts lasted between 30 minutes and one hour. Participants were selected based on their direct expertise in the four focus areas [See Table 3]

The interviews served two purposes: they deepened my understanding of current practices and gave me an opportunity to validated the initial design directions I had begun developing. The insights gathered provided a practical foundation for the design interventions presented in the next phase of the project.

Participant	Organisation	Role	Key Topics Discussed
P 2 (Round 2)	Sportbedrijf Rotterdam	Product Specialist	Shared insights on how collaboration between municipalities and sportsbedrijven work
P 12	BeweegBuro	Buurtsportcoach for Girls	Discussed girl-centered sports programming, using adapted methods to structure social interaction
P 13	InFit B.V.	Specialist design and layout of gym halls	How to inspire movement through participation by integrating innovative, engaging infrastructure
P 14	Kenniscentrum Sport & Beweging	Researcher & sports infrastructure specialist	Discussed the BVO model for designing activity-friendly environments
P 15	Municipality of Amsterdam	Advisor on Participatory Methods	Discussed legally mandated participation (Omgevingswet), methods used by the municipality and how to ensure diverse input representation
P 16	University of Utrecht	Researcher Sport & Society / Spot-On Project Lead Researcher	Discussed the nationwide SpotOn project researching 28 sports facility hotspots and consulting municipalities on co-creation
P 17	Municipality of Groningen	Sports Policy Advisor, Department of Social Development	Discussed scaling participation using the 'participatieladder', implementing community-submitted proposals
P 18	Breda Actief	Advisor Sport and Movement, Public Spaces	Discussed strategies for actively engaging inactive populations, and the role of the environment in creating motivation for movement
P 19	Howest / YET App	Android & iOS developer, AI researcher	Discussed the YET visual collage app designed to capture youth input on public space redesign
P 20	Parai AI	Co-Founder	Discussed leveraging AI to process raw qualitative data, generating digital representatives grounded in authentic community voices

Table 3 : Expert Interviews Round 2

4.2.2. How do Municipalities and Sportsbedrijven use participatory approaches to successfully co-create with communities?

→ Physical Participation Methods

- Town hall meetings and on-site consultations with local sports clubs.
- Neighborhood walk-arounds and door-to-door conversations to reach residents directly.
- Community-initiated projects (Rotterdam):
  - Citizens and sports clubs can propose new facilities to the municipality.
  - Encourages bottom-up participation and local ownership.
- Formalized participation models (Groningen):
  - Uses the "Participatieladder" model to structure levels of community involvement.
  - Methods include surveys, interviews, and dialogues with local interest groups.
  - Higher-impact projects emphasize deeper co-creation.
  - Participation levels are scaled based on "draagvlak" (target area).
  - Collaboration with local "dorpsbelangen" (village/community boards)
- Each project must include a participation plan (Amsterdam) and a final report detailing how community input influenced decisions.
- Pop-up activities at natural gathering points (e.g., shopping centers, markets) to engage passersby.
- Being physically present in communities enables informal, spontaneous conversations that often yield the most authentic insights.
- Fixed participation sessions with PE teachers and school communities provide structured feedback channels from those who understand daily user needs.
- Municipalities rely on trusted intermediaries like social workers, youth coordinators, and religious or community leaders to reach more diverse populations.

→ Digital Tools and Platforms

- Digital participation increasingly complements in-person engagement.
- Municipal platforms like "Stem van Groningen" and "OpenStad" (Amsterdam) allow residents to vote on proposals and follow project developments.
- Social media channels maintain ongoing connections between engagement sessions and help announce activities.
- Messaging apps like WhatsApp groups have become effective self-coordination and community activity organization
- Interactive maps and online surveys expand participation geographically and inclusively.

4.2.3. How are things being done differently in public sports Innovation?

→ Changing the Mindset

- Dutch municipalities are shifting away from top-down planning toward bottom-up
- They support co-created approaches that value lived experience and community initiative
- They evaluate ideas based on social value rather than imposing predefined solutions
- Focus is on activation and ownership in addtiion to facility installation
- Real innovation starts before the program and budget are fixed, when there's still room to question assumptions and rethink traditional (gym or sport hall) models.

"Let the inhabitants decide what they need — then you can ask the right questions to make the product better." - P18

→ Changing the Way We Move

- Sport organizations are prioritizing informal and spontaneous play over structured club-based activity.
- When a space allows informal play, it's easier to activate more people and make the area feel welcoming.
- Facilities must be brought to life through programming and community involvement, not just by providing hardware.
- BVO model ensures that sports environments are supported socially and organizationally — not just physically.

→ Welcoming New Sports and Communities

- Municipalities are embracing new and diverse forms of sport, reflecting broader inclusion and changing lifestyles.
- There is a rise of bootcamp-style fitness, powerlifting, and especially 3x3 basketball.
- Seen as a "positive trend toward broader inclusion of different sports."
- Communities now self-organize informal sport sessions, shifting away from formal club dependency.
- Gender-inclusive and youth-focused initiatives (Colors2Play method) are redefining participation by prioritizing social safety, trust, and agency in public sports spaces.

→ Designing for the entire ecosystem

- Across interviews, a consensus is sporting spaces must be activated, not just built.
- Success of a space depends on ongoing engagement, inclusion, and adaptive use.
- Rotterdam requires every new sports installation to have a plan for programming and community activation during the first weeks, ensuring momentum from the start.
- Reflects a broader transition from single infrastructure delivery to holistic ecosystem design.

4.2.4. How can we engage girls more to exercise and do sports?

→ **Prioritize Social Connection Over Competition**

- Girls care more about social interaction, having fun, and working together
- When games become too competitive many simply stop and begin talking with each other
- When the game focuses on fun and collaboration, participation is much higher
- Colors2Play, UDG combine music, creativity, and collaboration which has proven particularly effective in engaging girls

→ **Design for Privacy and Social Safety**

- Girls often prefer to play in smaller groups and at less busy, less visible times.
- In public courts, many girls feel constantly watched, which makes them uncomfortable and reluctant to participate.
- The lack of spatial flexibility can lead some girls to feel that "this is not a place for me."
- To include them, spaces must offer a socially and emotionally safe environment.
- Add shade and protection
- Ensure good lighting and visibility
- Girls often gain confidence through gradual participation—starting in smaller or safer spaces
- Pilot programs showed success using female-only sessions or facilitated mixed sessions to build trust and familiarity.

4.2.5. What are some challenges to participatory approaches?

- Early stakeholder involvement consistently emerges as the most critical factor for meaningful participatory innovation.
- There is a persistent difficulty in ensuring that less vocal or less active residents are represented, rather than only those who are already engaged or health-conscious.
- Participation processes often capture input from people who already sport regularly, while the inactive majority — those who could benefit most — remain unheard.
- Challenges persist in aligning hardware, software, and orgware — ensuring that physical installations, programming activities, and organizational structures work together to support ease of use and accessibility.
- Digital solutions like the YET app is promising but motivating people to use civic apps remains difficult. Digital platforms can extend reach, the most effective participation at the moment still happens face-to-face, through casual, low-barrier interactions in public spaces.

4.2.6. What are some important things to consider when using participatory approaches to co-innovate for public sporting spaces?

→ **Timely Stakeholder Involvement**

- Effective co-innovation depends on early and continuous stakeholder involvement.
- Engaging local actors such as Buurtsportcoaches, schools, and youth organizations during early phases ensures that their input meaningfully shapes design decisions.

→ **Holistic View on Design**

- Participatory design must adopt a systemic perspective, considering not only sporting infrastructure, but also environmental, social, and atmospheric factors shaping accessibility and inclusivity.
- Successful public sports spaces are defined by their atmosphere and sense of welcome, rather than solely by their technical infrastructure.
- Participatory insights can inform fundamental spatial strategies, beyond surface-level adaptations.
- InFit showed how innovative spatial design can spark children's natural urge to move.
- YET app showcases how youth can be empowered to visually articulate their ideal public spaces.

"You have two ways of making people sport. They need to get motivated themselves, or the environment around them creates that motivation." - P18

→ **Inclusive Community Engagement**

- Inclusive co-creation requires deliberate efforts to engage underrepresented groups who might otherwise be excluded from participatory processes.
- Collaborations with organizations (like WijGroningen) help municipalities reach harder-to-access populations to prevent exclusion of communities that might benefit most.
- Buurtsportcoaches possess valuable practical knowledge and seek genuine influence during early innovation stages rather than post-decision consultation.
- Go into neighborhoods directly, meet people in informal settings, and actively invite perspectives.

→ **Integrating Technology**

- Digital technologies should be used to enhance, rather than substitute, human-centered participatory processes.
- Engagement increases when digital participation is structured through targeted challenges rather than relying solely on spontaneous input.
- When building AI tools, sometimes choosing qualitative over quantitative data, (like Parai AI) can help amplify nuanced community voices rather than being overshadowed by dominant statistical narratives that come from surveys and other quantitative methods.

4.2.7. Choosing participatory methods

To find some additional participatory methods to those found in Chapter 4.2.2., I drew inspiration from books I came across during my studies at TU Delft. This includes the Convivial Toolbox (Sanders & Stappers, 2012), Roadmap for Creative Problem Solving Techniques (Heijne & Van Der Meer, 2019), and the Delft Design Guide (van Boeijen et al, 2020). I also found some interesting sources on Citizen Design Science (Mueller et al, 2018) and Peer to Peer Urbanism (Caperna et al, 2011) online.

Below [Table 4] is a list of methods used in designing with and for the public and public spaces. This is not an exhaustive list, but it serves as a guide to know what methods might be useful to use.

Method	Description	Strengths	Limitations	Best for
Workshops & Co-Design Sessions	Face-to-face collaborative sessions where residents, designers, and stakeholders brainstorm, sketch, and share ideas through mapping and group exercises	Deep engagement, direct collaboration, builds relationships, allows for complex discussion	Time-intensive, may exclude working people/ caregivers, can be dominated by vocal participants	Early design phases, building consensus among committed stakeholders
Digital Tools & VR / AR	Platforms like Qua-Kit and Virtual Reality environments that allow non-experts to visualize and modify designs interactively	Accessible to tech-savvy users, visualizes complex concepts, can reach broader audiences remotely	Digital divide excludes some populations, requires technical infrastructure, may feel impersonal	Communicating design concepts, engaging younger demographics, remote participation
Surveys & Interviews	Structured data collection methods to capture resident experiences, preferences, and priorities	Systematic data collection, can reach large numbers, quantifiable results	Often captures surface-level input, may miss nuanced needs, response bias toward active residents	Baseline research, validating design directions, reaching broader populations
Placemaking Events	Community-led activities with temporary installations, events, and interventions that activate spaces and encourage ownership	Tests ideas in real conditions, builds community ownership, culturally relevant, fun and engaging	Temporary nature, weather-dependent, may not represent all user groups, requires ongoing facilitation	Testing concepts, building community enthusiasm, activating underused spaces
Digital Participation Platforms	Online platforms for ongoing engagement, idea submission, voting, and project tracking	Asynchronous participation, transparent process, can handle large volumes of input	Digital literacy barriers, may lack depth of engagement, harder to build trust remotely	Ongoing feedback collection, idea generation, project transparency
Physical Prototype Testing	Allowing communities to interact with actual products or mock-ups before permanent installation	Concrete feedback, realistic testing conditions, experiential learning	Resource-intensive, weather-dependent, limited to specific technologies	Product testing, spatial configuration, user experience validation
Collaborative Urban Interventions	Events or performances integrated within design process that engage public creatively and stimulate dialogue	Creative engagement, reaches non-traditional participants, generates media attention	May be seen as tokenistic, requires artistic skills, limited to specific moments	Community activation, raising awareness, creative expression
Citizen Design Science	Map-based tools and e-participation methods that enable citizens to directly manipulate public space elements interactively	Empowers direct design input, spatial thinking, innovative engagement	Requires technical skills, may oversimplify complex design decisions	Spatial planning, neighborhood-scale interventions, design experimentation
Peer-to-Peer Urbanism	Community members leading design and activation processes themselves, with residents organizing neighbours and driving change from within	Authentic community ownership, sustainable engagement, builds local capacity, addresses power imbalances	Requires existing community organizing skills, may reinforce existing social hierarchies, slow to develop	Grassroots community development, building long-term local leadership, addressing systemic inequities

Table 4 : Overview of Participatory Methods

For my final design intervention, I decided to use a combination of co-design sessions, placemaking and digital participation platforms.

First, in order to user-test W&H Sports LED prototype, I chose 2 target audiences to focus on, and employed 2 different participatory methods to test how they would work in practice. *[See Chapter 4.4]*

Later on, I used a digital participation platform to connect some of the co-design workshop activities I designed to a digital space where the conversation could be continued *[See Chapter 5]*.

4.2.8. Evaluating initial design directions

I outlined two initial concepts for participatory methods and shared these with some participants during interviews to gather feedback on their potential and possible limitations.

Concept 1:
In response to recurring problems of poor collaboration and excluded target audiences, I considered developing an online collaboration tool. Different stakeholders could log in at any time and contribute according to their role in society. Participants could vote on concepts, creating more transparent and inclusive decision-making around sports innovations and co-designed spaces. Users could also add proposals and co-design these spaces and products in real-time.

Feedback:

"A digital space makes it easier to visualize and simulate innovations. However, having more opinions may also slow down decision-making." - Interviewee B(2)

"Digital literacy varies, especially among older adults. Virtual collaboration could save time, but the hardest part is getting the non-sporting residents to speak up — they don't come to the meetings." - Interviewee N

"Could be a powerful tool, but should not replace the face-to-face work that is still so important in building trust." - Interviewee O

Concept 2:
For the Paperdome in Amsterdam, I envisioned a public intervention featuring a prototype of W&H Sports' LED floor with a large white tarp that would serve as a feedback wall. Visitors could test the floor by running, bouncing a ball, or checking its grip, then be invited to record their experiences and suggestions for future applications of the technology on the tarp.

Feedback:

"If someone sees a big board in their neighborhood and can write something with a marker, that's already participation - informal, creative tools can bring that out from residents who may not see themselves as participants in a design process but still have needs and ideas." - Interviewee O

"I really like your idea of putting out a physical board at the site to gather feedback — it's low-threshold and very visible." - Interviewee P

"Deep, specific user feedback is often missing from current procurement and tendering processes. So this could be a testing ground for new concepts, where user feedback can help shape product design before installation" - P2

4.3 Design Criteria

To translate the research insights and refined scope into an actionable design, I developed a set of design criteria. The purpose of these criteria is to guide the design of interventions and processes that enable more inclusive, collaborative, and sustainable innovation within the Dutch public sports system.

01 - Start from community realities
Ground design in lived experiences by observing how people use—or avoid—public facilities and by listening to their needs. This ensures solutions respond to real contexts and are more likely to achieve long-term adoption.

02 – Build for equity and belonging
Design interventions that actively include groups often left out, such as girls, refugees, and people with cultural or accessibility needs. Beyond functional access, interventions should foster a sense of welcome and belonging in public sports spaces.

03 – Co-create as equals
Involve municipalities, suppliers, and end users as equal contributors from the start. Create processes where people see that their input matters and clearly shapes outcomes—moving participation beyond token consultation.

04 – Connect policy, practice, and business value
Bridge the gap between political ambitions and local realities. Align interventions with policy goals while addressing community needs. At the same time, strengthen the business value that suppliers like W&H Sports can deliver, positioning them as strategic partners in public value creation.

05 – Design for adaptability
Avoid one-size-fits-all solutions. Develop systems and methods that follow shared principles but adapt to different communities, facilities, and cultural contexts. Inclusion should be embedded from the start, co-shaping outcomes from day one.

06 – Make collaboration tangible
Address fragmented collaboration by designing tools and processes that clarify roles, align priorities, and synchronize timelines. Collaboration should be visible in practice, reducing silos and building shared ownership.

07 – Combine hybrid methods
Use both digital and physical modes of participation to broaden reach and make engagement more inclusive. Hybrid approaches balance accessibility, flexibility, and depth, ensuring that different stakeholders can contribute meaningfully.

4.4 Deploying Participation Methods

4.4.1. Goal and approach

Goal: I wanted to evaluate the LED flooring in different contexts and demonstrate to W&H Sports how participatory methods can be adapted based on target audience and available timeframe.

Approach: I selected two target audiences from different urban sports disciplines, pairing each with contrasting participatory methods—one long-term and one short-term, to evaluate the same product.

The overview of this is shown below in Figure 14.

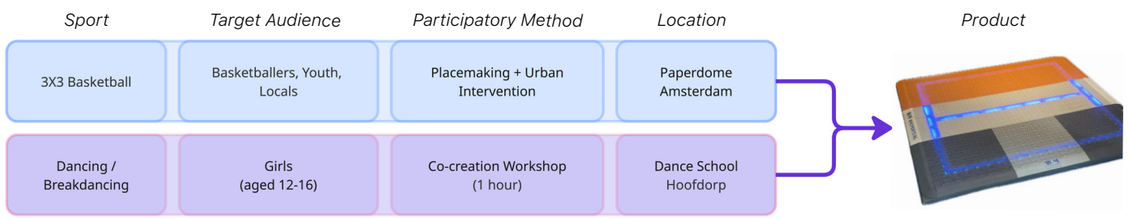


Figure 14: Approach Overview

4.4.2. Dancing (Urban Dance Ground 2.0)

Prototype : To provide relevant context for the girls, I chose the Urban Dance Ground 2.0 as the test prototype. The Urban Dance Ground (UDG) is a free, publicly accessible dance floor designed as a dedicated space for young people, particularly girls aged 12 to 18 to dance and socialize [See Figure 15]. Several UDG installations already exist in cities like Utrecht and Den Haag.

The 2.0 version [See Figure 16], is currently being co-developed together PARC / Griekspoor, and incorporates W&H Sports LED flooring, making it an ideal case for testing how interactive technology can enhance public sports spaces.

Figure 15: Urban Dance Ground (UDG, n.d.)

Figure 16: Urban Dance Ground 2.0

Method: To plan the co-creation session, I collaborated with PARC to organize a workshop at a nearby dance school, inviting 11 girls aged 12-16 to share their ideas for the new Urban Dance Ground 2.0. The 45 minute workshop format, with methods primarily sourced from Heijne & Van de Meer (2019), was structured around several activities. Participants first completed worksheets [See Appendix C] exploring how they like to move and express themselves, along with their frustrations and sentiments about sporting in public spaces. They then drew their ideal UDG and explained how they would use their envisioned space.

The closed session format allowed for structured mapping exercises, where participants could directly shape ideas for improving their environment. The session concluded with hands-on testing of the new LED floor technology in a controlled environment, gathering participants' impressions. Additionally, I was able to use Dembrane AI software (Dembrane, n.d.), which audio-transcribes conversations into insights and generates real-time reports.

Target Audience: Girls aged between 12-16 were identified as a priority target audience due to their underrepresentation and vulnerability in public sports environments. Multiple stakeholders emphasized that girls often lack safe, inclusive spaces to participate in sport, and their needs are rarely integrated into spatial planning processes.

Pilot: I did a pilot of this co-creation session with 8 TU Delft Industrial Design students (all female). I made 2 groups, one Dutch speaking and the other English speaking to test multi-language use of the software The Dembrane software was straightforward to use, required a phone to scan a QR code and directly record the conversation to a dashboard (without the need to download an application) - reducing privacy concerns.

Figure 17: Urban Dance Ground - Pilot Session

The pilot was useful to see if there were any changes that needed to be made, and if the software was working correctly. I was quite amazed by the accuracy of the insights that were gathered at the co-creation pilot, and these results were verified with the 2 groups as well. The highlights could also be then turned into a full report within minutes. Some of these insights can be seen in Appendix C.

Results: The session workshop generated some interesting insights from the girls of what they would like the space to look like, and allowed PARC to user-test their new flooring for the UDG 2.0. Some impressions of this session are highlighted in Figure 18. Full session results can be viewed in Appendix C.

Figure 18: Urban Dance Ground - Co-Creation Session

The two groups of girls came up with creative ideas, as well as practical feedback on how the UDG 2.0 could be improved. Some of the ones that stood out were:

- Better overhead lighting / lantern pole
- Swings nearby, a ballet bar, built in trampoline or “Air track“ to practice tricks
- Snacks and drinks dispenser and a water tap
- A coat rack / place to store clothing
- The floor feels too grippy at the moment
- A timer for the music [played at the DJ booth] would be nice
- A cup holder and charging port for smartphone

Dembrane AI Results: The Dembrane software was easy to use, and we were able to record the session with 2 groups. The AI was then able to make a report, and summary of what was discussed. [See Appendix C].

I was able to then use those insights to generate two prompts based on what the two groups had discussed, generate some AI impressions, which I call “Provotypes”, using the W&H Playscape tool [See Chapter 5] that I designed for W&H Sports.

Below are the four corresponding AI provotypes generated:

Figure 19: Urban Dance Ground - Co-Creation Session Provotypes

Reflection: It was really rewarding to see how a well planned co-design session could turn such unique results . The pre-designed worksheets gave the girls structure without forcing their imagination too much, and they were able to remain creative and energetic throughout the session. Things turned a bit chaotic towards the end when everyone wanted to try the floor out, so making sure there are small groups to work was useful.

I wish I could have shown some of these provotypes to them as part of the session itself, but due to time constraints that was not possible. Showing it back to them might have sparked some further ideas and suggestions.

4.4.3. 3x3 Basketball (Paperdome Amsterdam)

3x3 basketball is rapidly on the rise as an urban sport in the Netherlands, following the success of their mens and womens national teams at the Olympics. Therefore it would be interesting to see how technology and innovation might elevate the sport itself, but also the spaces where its played.

Prototype: I used a prototype for a mini- basketball floor built together with LumenArt, to set up inside the Paperdome, located in the Kraaiennest neighbourhood in Amsterdam Zuid Oost. The floor measured 3m by 3m, and had LED flooring tiles that could be controlled with a smartphone app. [See Figure 20]

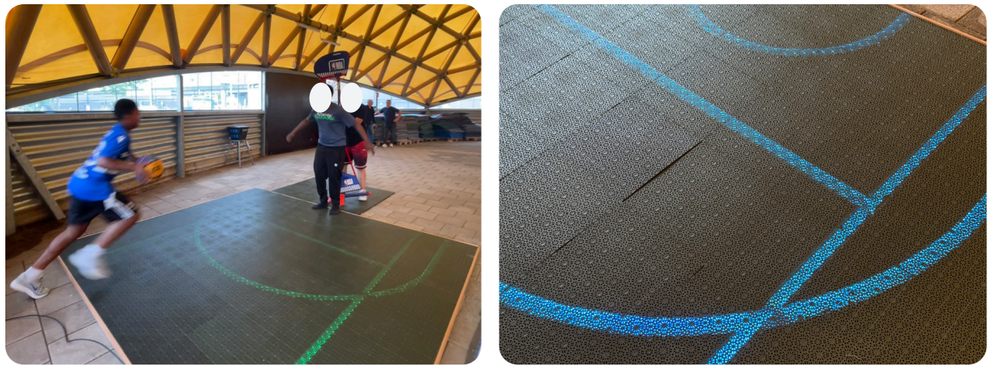


Figure 20: Paperdome Prototype basketball floor

Method : The Paperdome [Figure 21], operated by sport foundation 3X3 Unites, provided the ideal arena to test the new floor. The testing approach was carefully designed as a long-term, open-access, unmoderated format spanning six weeks. Working together with 3X3 Unites, I installed the floor alongside a "feedback wall" with pens, voting stickers, and templates where users could share ideas.

This format suited the urban sporting culture of the area, while allowing insights to emerge gradually from members of the community who shape the space's everyday use. The extended time frame ensured we captured broader community perspectives beyond just scheduled activities.

Figure 21: The Paperdome , K-Buurt, Amsterdam Zuid Oost

Target Audience : The target audience would be anyone who would be using the Paperdome for sporting activities and sport clinics. This includes basketballers, athletes of other sports, recreational players, the local youth, parents and the rest of the general public.

(Co-)Designing the "*Paperdroom*": The feedback wall consisted of a large 3m by 3m canvas, with questions that would serve as prompts for people to share their ideas. Rather than design the canvas myself, I chose to co-create with the Paperdome Core Team and decide together what could be asked as prompt questions and what the overall aesthetic of the canvas would look like.

To do this, I hosted co-creation session with the Core Team at the Paperdome itself. It was a rewarding experience, because we were able to really make the tarp fit in with the space. We chose a catchy title, "Paperdroom" (translates to *Paper-Dream*) and used local street terminology for the prompt questions. I then asked 2 artists from the neighbourhood, to help me bring it to life with fine line marker and graffiti spray paint.

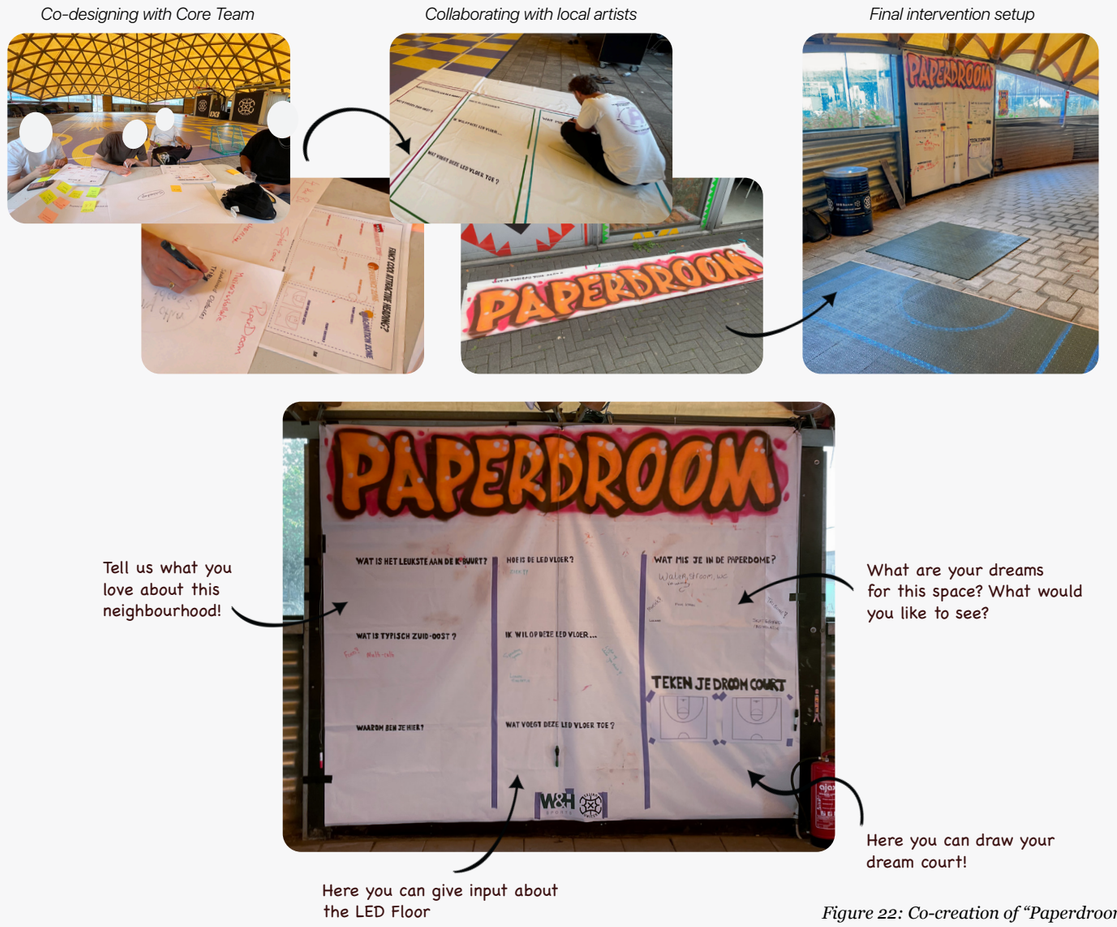


Figure 22: Co-creation of "Paperdroom"

Results: The Paperdroom intervention was quite well received, with a lot of insights gathered over the weeks. I was also able to add some voting stickers halfway through, so that people could actively vote on ideas that others had put down. Some of the results can be seen below.

Figure 23: Results of the Paperdroom

Residents expressed strong appreciation for innovations that would bring positive change and upgraded sporting facilities to their neighborhood. While the LED floor feedback was generally positive, users identified critical technical issues like flickering lines that need addressing. When asked "What do you miss in the Paperdome?" the community painted a clear picture of their needs: speakers, tribune seating, improved lighting, changing rooms, and social seating areas.

Reflection: The entire process felt like a true community effort. From co-designing with the youth, to bringing in artists and the locals to really engage with the intervention - it was a very rewarding experience overall. Designing the canvas in a way where people were asked about their neighbourhood, hopes and dreams for the space and not just asked to user test an give feedback on a product, really worked. It shows that when you want to engage an entire community and have them on board with your new ideas, that you also show empathy and interest in their lives and the places they live in.

A striking finding emerged from asking about the broader needs for the space - many aligned directly with W&H Sports' existing product portfolio. This suggests an important strategic opportunity: through participatory interventions like this, sports suppliers can discover how to move beyond single-product solutions to comprehensively service a space and its users.

Several implementation lessons emerged. Despite choosing minimal moderation, I still needed to actively invite people to test the floor and provide feedback. A community kick-off event with 3X3 Unites could have helped to raise awareness and engagement from the start. Technical enhancements like a physical control panel for changing LED colors and patterns would have also enriched the experience, though security concerns prevented placing valuable equipment on-site. When the flooring malfunctioned, earlier concerns from interviews materialized. Coordinating repairs proved challenging due to summer schedules and travel distances, and the broken floor skewed user feedback for several days. This underscored the critical importance of robust maintenance and service processes for public installations.

A final observation: while these participatory processes create community ownership and valuable insights, they are time-intensive. Future interventions should explore methods to maximize feedback efficiency while maintaining authentic engagement.

4.5. Interim Conclusion

This chapter concludes that meaningful innovation in public sports emerges not from technological advancement alone but from the quality of collaboration that underpins it. The insights highlight that co-creation must begin early in the process, before key decisions and budgets are set, allowing municipalities, communities, and suppliers to act as equal contributors. Participation becomes effective when it is made tangible—through concrete methods, shared ownership, and continuous dialogue between policy and practice.

The design criteria developed in this chapter translate these insights into actionable principles, re-framing the role of sports suppliers to facilitators of community-driven change.

The following six implications guide the next design phase.

Operationalize the Innovation Framework
Develop a formalized, practical framework that guides suppliers on how to engage early with municipalities and communities. This framework should clarify roles, align expectations, and synchronize timelines to address fragmented collaboration.

Establish a Hybrid Participatory Toolkit
Build on the success of the pilot methods to create a structured toolkit. This toolkit should help suppliers select and adapt (hybrid) participatory methods suited to different audiences and project contexts.

Integrate Insight-to-Action Processes
Address the time-intensive nature of participatory processes by streamlining feedback collection and translate qualitative input directly into tangible design outputs.

Enable Integrated Solutions
Support suppliers in moving beyond single-product thinking by developing tools that help visualize integrated solutions. These should connect multiple elements (such as seating, lighting, and social amenities) to strengthen the overall ecosystem of public spaces.

Prioritize Inclusion and Belonging
Explicitly address who is left out of public sports participation—particularly girls, women, and other underrepresented groups.

Bridge Policy, Practice, and Business Value
Align community and policy goals with supplier business objectives. Demonstrate how co-innovation can generate shared value across institutional, social, and market levels, reinforcing the long-term sustainability of public sports innovation.

Chapter 5

The Game Plan

5.1 The Strategic Shift

5.2.1. Breaking the cycle

The Dutch public sports system is trapped in a vicious cycle. Fragmented decision-making and resource constraints create silos between stakeholders, preventing meaningful collaboration and excluding end users from design decisions. The result: a stream of innovations that fail to address systemic issues, wasting public resources while under-serving communities. Every misaligned product reinforces this dysfunction.

W&H Sports is uniquely positioned to break this cycle. As an established supplier with deep market knowledge but without bureaucratic constraints, and their new intention to become an innovator of products themselves, the company can bridge the gap between institutional requirements and the real sporting needs of the community.

This requires a fundamental shift: from passive supplier to proactive innovator, engaging stakeholders from day one and designing with and for the communities they serve. The payoff is significant—not only does this approach unlock new business opportunities and strengthen competitive positioning, but it establishes W&H Sports as the company that doesn't just sell better products, but reshapes the entire conversation around public sports innovation.

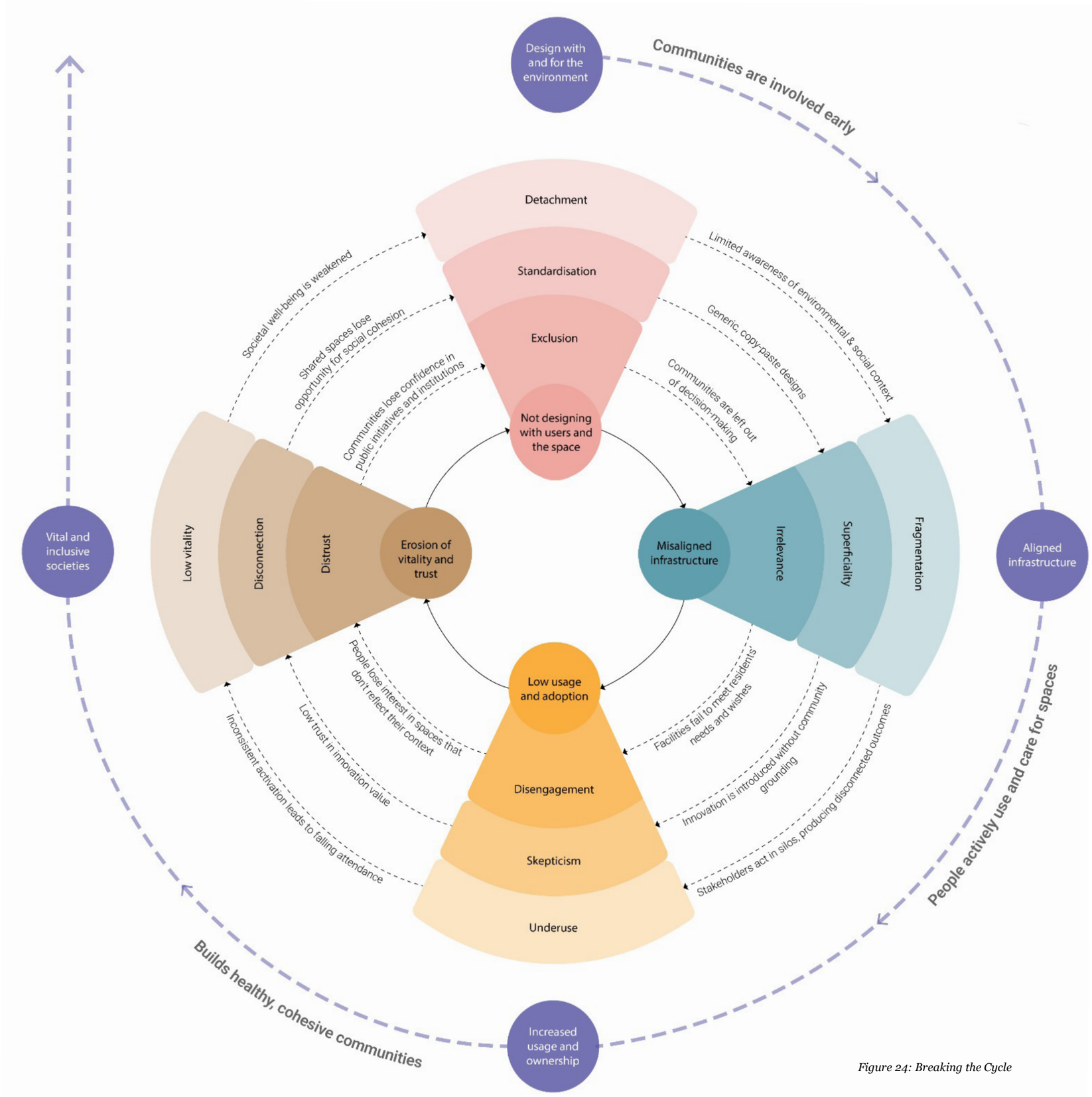


Figure 24: Breaking the Cycle

5.2.2. Expanding the business

W&H Sports has already shown their desire to innovate and bring value to public sports through their new innovations like the LED floor. However, this transition also requires taking agency in investing resources to develop robust innovation practices. This means that W&H can continue selling equipment through existing contracts and tenders while simultaneously developing new products through early collaboration with communities, innovation partners, and design advisors.

This proactive approach positions W&H Sports to help municipalities fulfill their participatory requirements under the Omgevingswet. Moreover, by demonstrating that their products and innovations are grounded in actual user needs and community input, W&H Sports strengthens its competitive position in future tenders. This strategic shift benefits W&H Sports as a business in two complementary ways:

Supplier perspective: Adding early participatory engagement allows the company to better understand user needs and translate them into more relevant, comprehensive, and competitive tender proposals for sporting equipment and facilities.

Innovator perspective: Collaborating with stakeholders and testing new concepts based on real end-user insights strengthens both the social and practical value of future sport innovations.

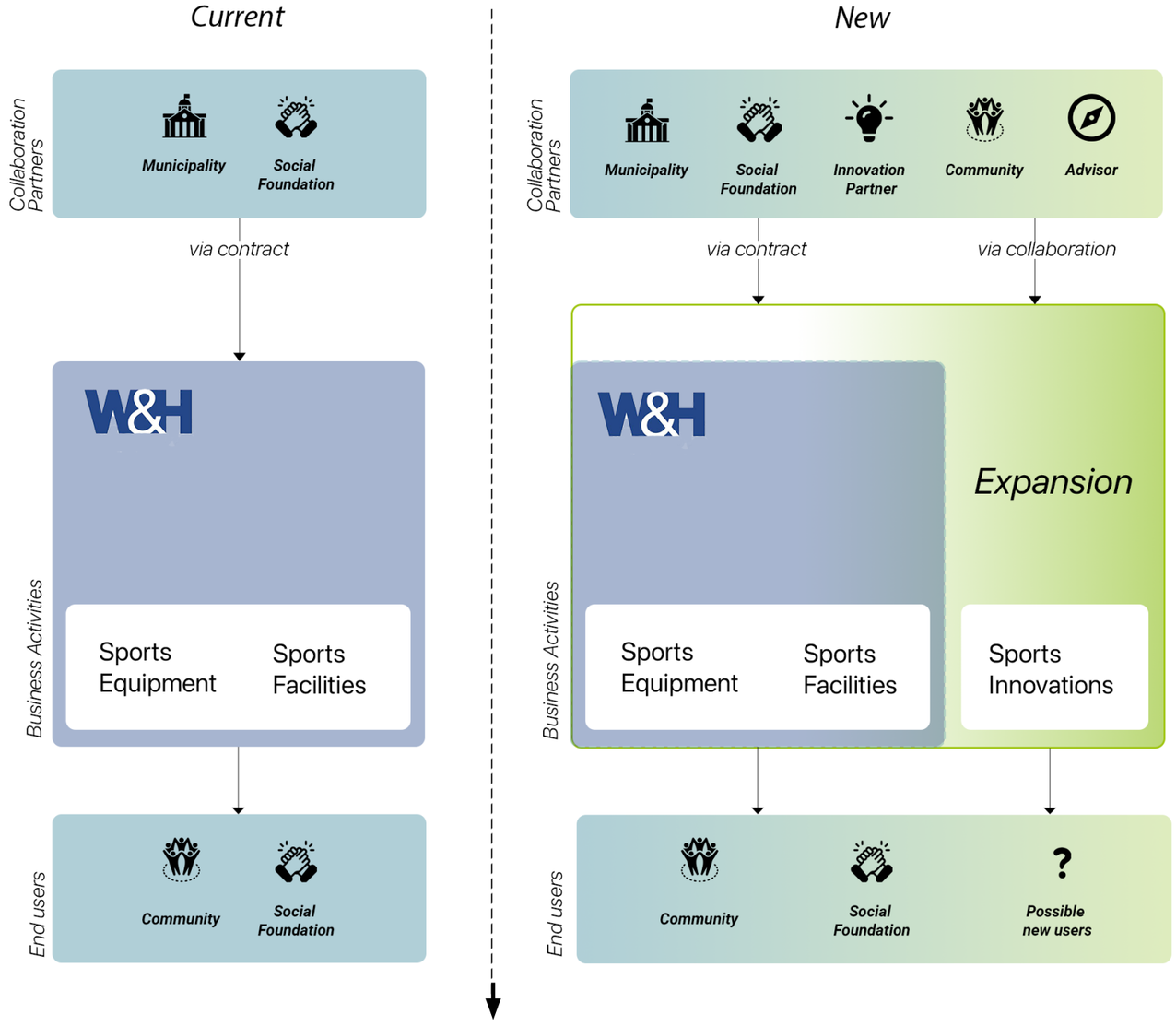


Figure 25: Expanding the business

5.2.2. Making Bold Choices - A Framework for Transformation

In order to achieve this envisioned future and successfully transition from equipment supplier to strategic innovation partner, W&H Sports must make bold choices. These aren't minor adjustments—they represent fundamental shifts in mindset, process, and market positioning that will redefine how the company creates value in public sports.

These choices represent the future positioning W&H Sports must work toward:

W&H Sports is the strategic innovation partner that drives public sports innovation by engaging communities early through participatory design and strategic collaboration, offering user-centered solutions that meet both policy requirements and real community needs, developing sports infrastructure that genuinely serves diverse populations and achieves lasting public value.

To make this vision more concrete, Figure 26 frames the areas W&H Sports can expand into to guide the development of their own tools and processes - offering a base for actionable next steps. Each bold choice involves specific activities, enabling conditions, and barriers. Some factors are unique to individual choices, while others are systemic. The framework is organized around the following interdependent bold choices:

Inclusive Mindset – Moving beyond consultation to genuine co-creation means recognizing that different communities have different needs, barriers, and ways of engaging. It requires designing for ***and with*** specific target audiences.

Stakeholder Collaboration – Building partnerships and collaborating with end users early in the innovation process allows solutions to emerge from shared understanding. It also means recognizing when to lead and when to support.

Adaptive & Iterative Design Process – Public sports innovation is unpredictable - what works in one neighborhood may fail in another. Rather than pursuing perfect solutions upfront, this choice embraces prototyping, testing, learning, and adjusting. It means being comfortable with uncertainty and building feedback loops into development so that products evolve based on real-world use, not assumptions.

Value-Driven Implementation – Success isn't measured by product sales alone. W&H Sports can demonstrate how their innovations serve municipalities' policy objectives (like inclusivity under the Omgevingswet), meet community needs (like safe spaces for girls) and strengthen their own market position. These three forms of value—policy, social, and business—can reinforce each other when innovation is done well.

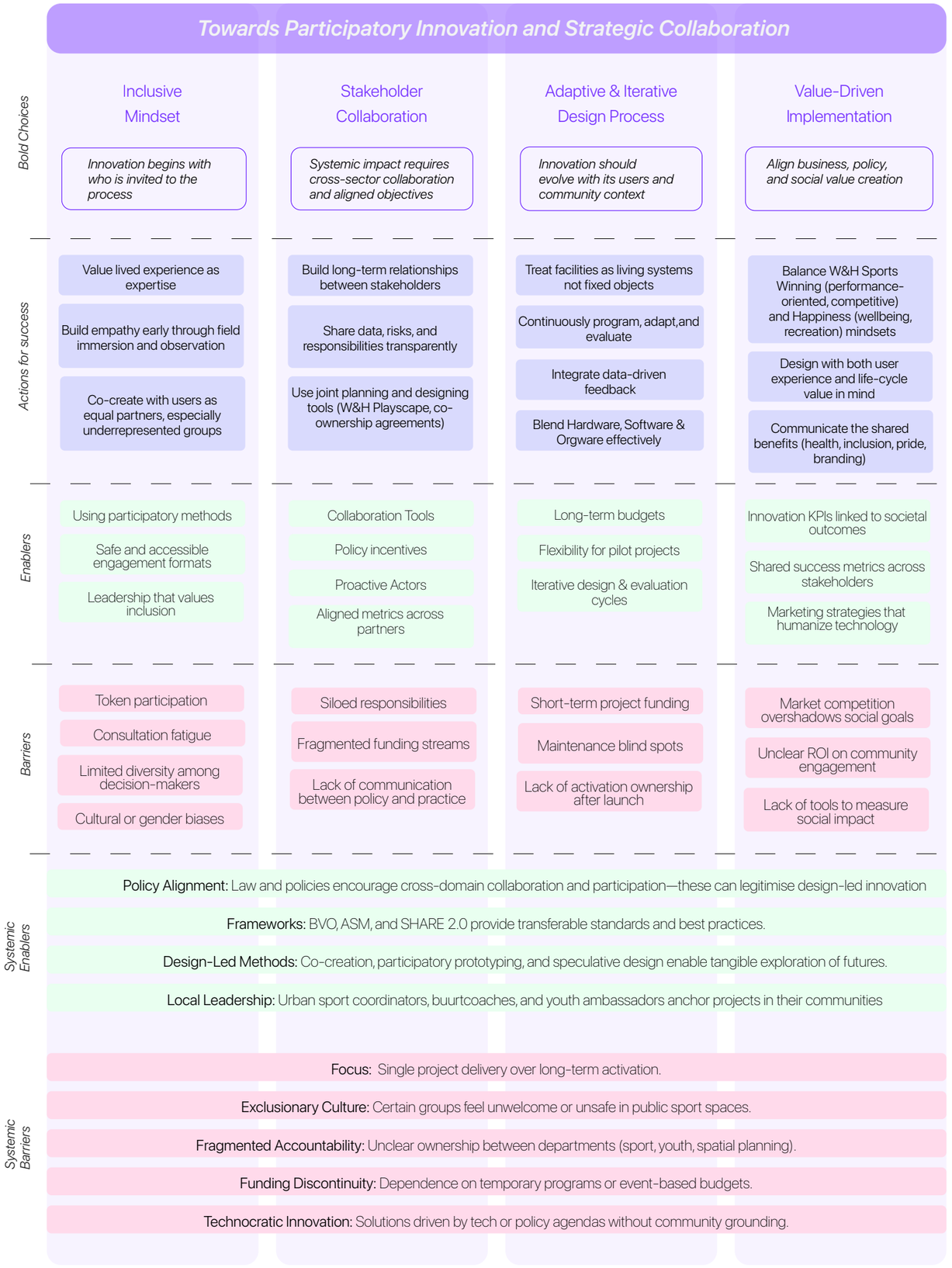


Figure 26: Framework for Innovation

5.2. W&H Playscape Toolkit

5.2.1. What's in it?

Many sports equipment suppliers, including W&H Sports, have limited experience facilitating collaborative innovation processes. So, to support this transition, I developed the W&H Playscape Toolkit—a set of tangible tools designed to align with the company's new strategic direction and help them lead co-creation sessions with confidence.

The toolkit consists of three interconnected components:

Playscape Card Game: a simple, role-based card game that helps stakeholders explore new products or facilities through guided conversation, uncovering needs and priorities that might otherwise remain unspoken.

Playscape Portal: a digital platform that enables spaces to be co-designed in real-time. It also serves as a collaborative dashboard during collaboration sessions, making the process transparent and allowing participants to see their contributions reflected instantly.

KIT: an intelligent, evolving assistant that is part of the Playscape Portal. KIT supports W&H Sports during co-creation sessions by suggesting suitable facilitation techniques, surfacing less-heard voices, and reflecting on ongoing conversations. Over time, it becomes a living repository of community insights and participatory practices that inform future projects.

5.2.2. Brand Identity

I chose a simple brand direction for the toolkit, taking inspiration from W&H Sports new business venture, W&H Play which was launched in September 2025 (W&H Play, n.d.).

The name "Playscape" was chosen to reflect the toolkit's role in creating spaces - both physical and digital - where play, dialogue, and co-creation can unfold. The card game embodies the playful and exploratory side of this identity, while the portal represents the "scape" - an evolving environment where ideas, voices, and insights come together. This branding would be used on all collaborative tools that W&H Sports would deploy, making their innovation and participatory processes stand out from their core equipment supplying business.

W&H PLAYSCAPE

Figure 27: W&H Playscape Logo

Figure 28: W&H Playscape Card Game

5.2.3. The Playscape Card Game

The Playscape Card Game transforms early-stage discussions into engaging, collaborative exchanges. Using card decks, stakeholders represent different roles, motivations, or challenges, encouraging them to think beyond their usual viewpoints. By turning conversation into a structured yet playful interaction, the game aims to help reveal hidden needs, align priorities, and lay the groundwork for meaningful co-creation.

This chapter introduces the different types of cards, explains how the game is played, and illustrates how it helps W&H Sports guide meaningful co-creation discussions around new sport products and facilities.

5.2.3.1. Why cards?

The selection of a serious card game format is justified by its ability to serve as “an accessible, cost-effective tool for facilitating complex multi-stakeholder dialogue, particularly within problem-structuring and decision-making processes” (Aubert et al., 2022).

By framing all participants as players, the activity “flattens hierarchical relationships between involved stakeholders” (Zhou, 2014), encourages involvement in what might otherwise be an intimidating process (Jensen & Jensen, 2011) and prevents any individual from monopolizing the discussion” (Albrechtsen, 2025).

Finally, as a boundary object, the Playscape Card Game provides a safe environment for expressing differing opinions, “making conflicts of interest explicit and transparent as a first step toward consensual decision-making” (Aubert et al., 2022) and information manageable and accessible to those who are not so trained in qualitative research (Jackson, 2008).

Figure 29: W&H Playscape Card Game

5.2.3.2 The Rules and Gameplay

The aim of this game is not to “win,” but to surface perspectives, values, risks, and actions that typically remain hidden. Outcomes often include shared priorities, design principles, or actionable insights for W&H Sports to develop further.

Setup: Five stakeholder roles (Municipality, Community, Social Foundation, Innovation Partner, and Advisor) each receive a themed deck reflecting their perspective. The Game Master (W&H Sports) first sets the project scope (Product, Facility, or Neighborhood) and guides players through one or more design stages: Discover, Define, and Deliver, a full design sprint (all stages in one go).

How to play: Players go clockwise, taking turns playing cards that reflect their stakeholder viewpoint, responding to one another’s ideas as the board gradually fills with contributions. Risk and Value cards can be played at any time to challenge or reinforce emerging directions.

Outcome: Sessions typically would last 1–2 hours and conclude when participants agree enough insights have been collected. W&H Sports can document, analyze, and upload the insights to the Playscape Portal for further reflection or ongoing digital collaboration.

5.2.3.3 The Game Cards

The game consists of five Stakeholder decks, along with shared Risk and Value cards. On the back of the cards are certain prompts, questions under certain categories. The content of the cards were chosen based off the interviews and field research insights. To simplify deck creation and game play, certain stakeholders are grouped under broader categories—for example, Sportbedrijven and Municipality are combined into a single category. Some examples from each category per stakeholder can be seen in Figure 30. The full version of all the card game, including all the card decks and gameboard can be found in Appendix D.

Figure 30: W&H Playscape Card Game - Card Decks

5.2.3.4 The Game Board

The game also has a built in gameboard, that represents a simple 3 stage innovation process. Players can decide between the “Discover“, “Define” and “Deliver” stages of the design process to focus the conversation on. Additionally, there are 3 concentric disks, that help choose the scope of innovation to focus on - Product, Facility or Neighbourhood. Players can also choose to have variations of the scope, for example “a product in a facility“ or “facility in a neighbourhood“.

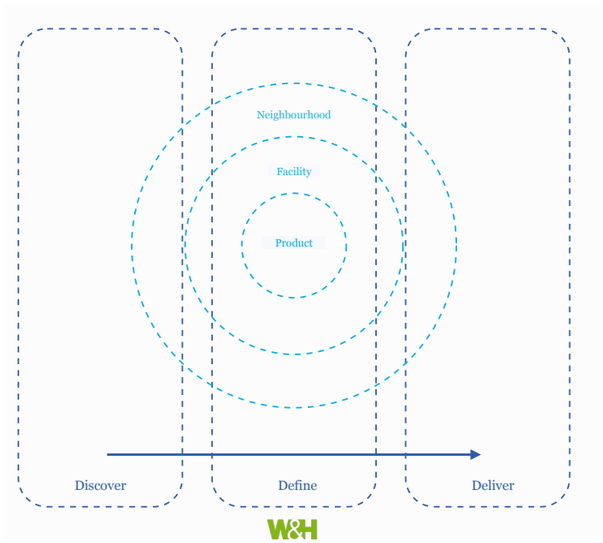


Figure 31: W&H Playscape Card Game - Game Board

Figure 32: W&H Playscape Card Game - Playing the game

5.2.4 The Playscape Portal

The Playscape Portal extends the card game into a digital environment, allowing Live Co-Design Playscapes to be created from the insights and ideas generated during collaborative sessions. The platform enables W&H Sports to continue these discussions online, where more participants can join remotely, contribute in real time, and collectively shape outcomes beyond the workshop setting.

Each Live Co-Design Playscape functions as an interactive 3D project space where concepts, designs, and community feedback are visualized together. The platform also includes a Co-Design Dashboard, which provides W&H Sports with tools to organize sessions, capture insights, and manage ongoing participatory processes.

Within these digital spaces, KIT acts as an intelligent facilitator (named after the unsung hero in most team sports - the kitman). KIT guides discussions, suggests suitable participatory methods, and surfaces underrepresented perspectives based on previously uploaded transcripts and insights. By connecting the physical and digital environments, KIT ensures that the collaborative momentum of the Playscape continues seamlessly online.

5.2.4.1. Vibe-Coding with Loveable AI

I used a platform called Loveable AI to vibe-code a fully functional prototype of the portal. Using ChatGPT I was able to setup a basic structure of a website, and from there I would be able to make specific changes by talking with the AI, by articulating my intent, test outputs, and iteratively adjust prompts. This makes it particularly effective for prototyping and rapid idea validation and I was able to get almost all the parts of the website to fully function. This was really useful when user-testing the UDG and validating, because I was able to get real results rather than imply them. [See Chapter 4.4.2.]

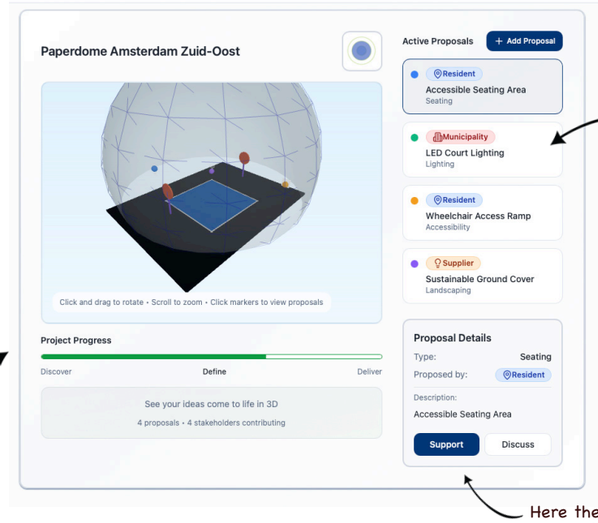
You can see the results of this portal in Figure 33

You can visit the prototype website here: https://whplayscape.lovable.app/

Or scan the QR code:

Disclaimer: This portal was developed purely for prototyping and proof-of-concept purposes. All images, figures, names, and prices are entirely fictitious and intended for demonstration only; they do not reflect real products, data, or market conditions.

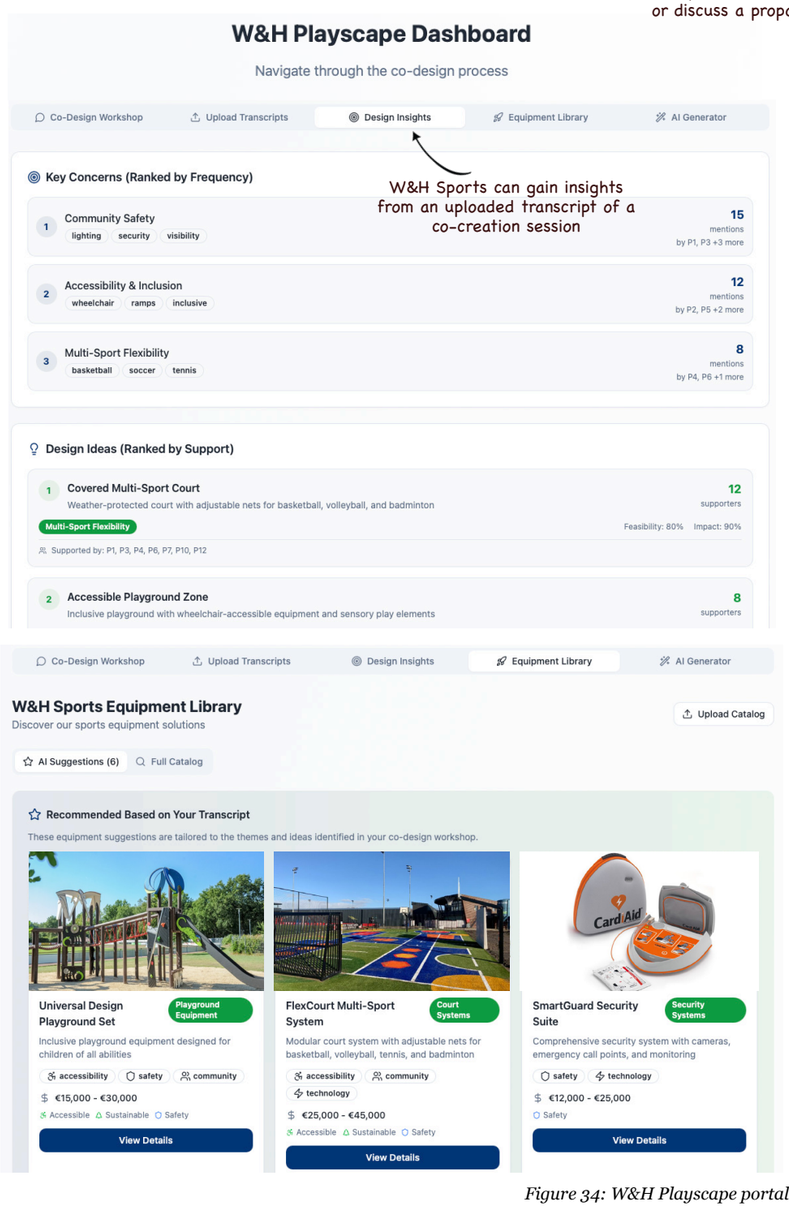
Figure 33: W&H Playscape portal



Check progress of the Project and view the space in 3D

Here they can add a proposal and see what others have proposed

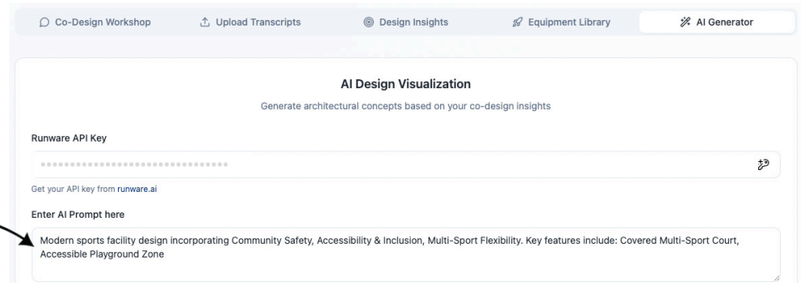
Here they can either support or discuss a proposal



W&H Sports can gain insights from an uploaded transcript of a co-creation session

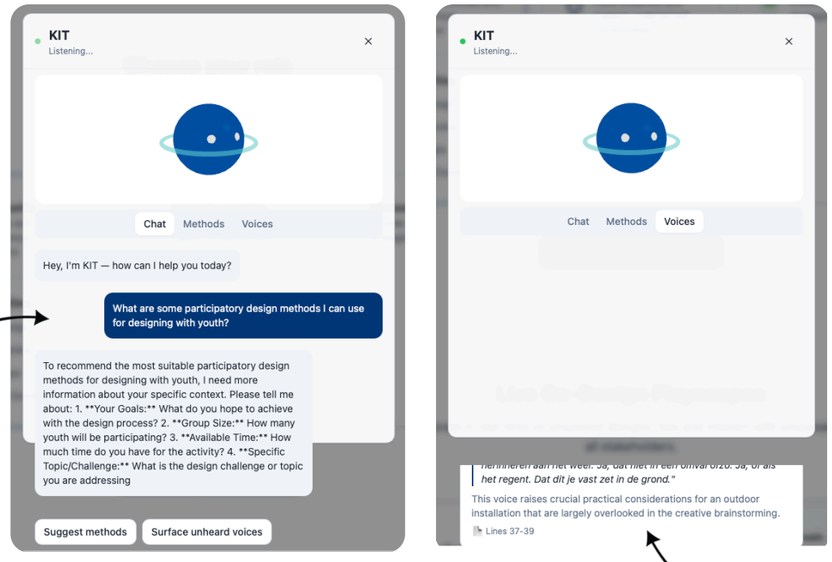
The AI also recommends exisitng products based on discussions in the transcript

Figure 34: W&H Playscape portal



Throw in an AI prompt and you get impressions instantly

Chatting to KIT



Asking KIT about Participatory Methods!

Here KIT has picked up a request from someone who might have not been heard

Disclaimer: This portal was developed purely for prototyping and proof-of-concept purposes. All images, figures, names, and prices are entirely fictitious and intended for demonstration only; they do not reflect real products, data, or market conditions.

5.3 Evaluation

5.3.1. Evaluation with the Client

The aim of this evaluation was to determine how effectively the designed methods and tools support W&H Sports' transition toward a more facilitative and participatory role in sport innovation.

The evaluation employed the Desirability / Feasibility / Viability framework to assess whether the Playscape Toolkit could support W&H Sports' transition from equipment supplier to innovation facilitator. This framework examines whether stakeholders want the solution, whether it can be practically implemented, and if creates added value. The evaluation was conducted in two phases with W&H Sports: first assessing the participatory methods used throughout the project, then evaluating the complete Playscape Toolkit comprising the card game, digital portal, and the Transformation Framework.

5.3.2 Evaluation Results

Desirability: Stakeholder Interest and Perceived Value

The client demonstrated strong interest in the novel approach, noting it was "something they had not tried before." They particularly valued the systematic insight gathering, appreciating both the 6-week Paperdroom data collection and the rapid insights generated from the UDG co-creation session.

The Playscape Portal generated the strongest enthusiasm - progressing from initial interest to calling it "genius" when they saw how it connected participation insights directly to their equipment catalog. They immediately recognized its value and requested a second iteration that would link session insights to products already on their website. W&H Sports also expressed interest in expanding their capabilities, specifically requesting information about licensing the AI transcription tool and showing enthusiasm for launching "design challenges" on the YET app.

However, they raised concerns about differentiation from existing municipal processes, noting that "municipalities were already doing a lot of participatory design" and questioning what unique value they would add to these processes.

Feasibility: Implementation and Operational Challenges

The evaluation revealed significant resource and capability constraints. W&H Sports found the participatory methods "time intensive" and initially felt they "didn't have the time or resources" to conduct card game sessions, though they became more convinced after seeing the developed prototype in context. They acknowledged needing time to "feel comfortable in that role" as facilitators, highlighting a capability gap in their current organization.

The client identified persistent challenges in user adoption, noting that "getting people to download apps and find sites is always a challenge" and that engaging young people on digital platforms "always seems hard." They emphasized that a dedicated facilitator role would be necessary to ensure smooth implementation.

On the positive side, they showed readiness to integrate new technologies, expressing specific interest in licensing the AI tools used in the research. The KIT component remained too underdeveloped for full evaluation, though the client showed enthusiasm about incorporating AI into their processes for greater efficiency.

Viability: Business Model and Strategic Alignment

The toolkit aligned well with W&H Sports' strategic direction - they confirmed that most "bold choices" identified in the framework were already in their pipeline, and their recent launch of W&H Play (focusing on outdoor playground equipment) demonstrated commitment to expanding beyond traditional sports equipment supply. The framework would help them establish core activities and guide their transition.

However business model uncertainties also emerged. They questioned how they could "bill potential clients" for facilitation services and what the "return on investment" would be for these new approaches. While they remained open to developing the portal in the future and saw it as valuable for client meetings and municipal feedback sessions, they struggled to define a sustainable revenue model for their facilitative role. This tension between strategic alignment and unclear monetization pathways represents the primary viability challenge facing implementation.

Figure 35: Toolkit evaluation

5.3.3. Evaluation with Stakeholders

The aim of this evaluation was to evaluate the Playscape Cards and Playscape Portal, since these are the two tools that would be used by stakeholders in the innovation processes of W&H Sports. I was also able to get some feedback on some of the participatory methods I deployed in practice.

Due to time and logistical constraints of the project, it was not possible to arrange a full stakeholder session with several stakeholders at once. However, I was still able to get some valuable feedback from 7 different stakeholders. I sent them instructions for the cards via email, and we evaluated online via video conferencing. The stakeholders chosen to evaluate were those from the interview rounds, and included an academic researcher, Buurtsportcoach, policy representative, 3x3 Unites, gym architect and two representatives from Sportbedrijven. Since KIT was still not fully developed, it was not shown as part of the evaluation. I combined their main points of feedback below:

5.3.4 Evaluation Results

(1) Playscape Cards

Desirability: Stakeholder Interest and Perceived Value

Stakeholders broadly affirmed that the cards addressed the kinds of conversations typically present in co-creation processes. As one participant put it, the categories "fit quite well with the type of discussions we usually have around new or renewed sports facilities." The cards were seen as an effective tool to balance ideas, risks, and practical actions, while also helping stakeholders approach conversations with greater empathy and clarity.

Multiple participants appreciated that the card format could equalize input from stakeholders of varying experience levels, particularly during early-stage processes. As one noted, "It's a tool which can give people who don't know what they are talking about the right questions and the right information to make the right questions." This dynamic was echoed across interviews, with participants highlighting the value of the tool for Discovery and Definition phases, and for giving structure to workshops and vision-setting sessions. The role-switching mechanic was also praised for promoting broader perspective-taking.

"It could help residents or local sports clubs feel more comfortable sharing their views alongside policymakers" - P2

Feasibility: Implementation and Operational Challenges

While implementation potential was seen as strong, several practical limitations were noted. Participants expressed concern about how easily the tool could be integrated into existing municipal workflows, particularly under resource constraints.

Content-wise, feedback focused on the need for greater specificity in certain cards. As one participant explained, "Some of the value or consideration cards could be more specific — if too general, they lose relevance for people working in the field." In particular, the municipal perspective was seen as underrepresented, with requests for prompts that address long-term maintenance, financial continuity, interdepartmental coordination, and shared responsibility. Others emphasized the need for implementation-focused cards that acknowledge policy constraints, procurement rules, and budget cycles. While the card texts were generally described as clear, small examples or context hints were recommended to aid interpretation across diverse audiences.

Viability: Business Model and Strategic Alignment

While the tool was appreciated for lowering barriers and encouraging open dialogue, stakeholders emphasized the need to position it as a serious planning resource, especially when working with municipalities or policymakers.

One participant warned that "the biggest risk is perception — some people might see it as too playful or not serious enough." To increase perceived legitimacy, stakeholders strongly advised showcasing tangible outputs and real-world examples where the cards have directly influenced project decisions or policies. As one suggested, "If people can see how it's already added value elsewhere, it'll feel much more credible." Several interviewees noted that official endorsement or co-use by municipalities or semi-public sports organizations (e.g. Sportbedrijven) would be essential in building trust and encouraging broader adoption across sectors.

(2) Playscape Portal

Desirability: Stakeholder Interest and Perceived Value

The portal's AI features generated strong enthusiasm, with stakeholders praising automatic transcript analysis, insight extraction, and visual generation for making feedback "easier to digest." They valued the clear role definitions and dashboard that tracks project progress in one shared space.

Stakeholders recognized particular value for resource-constrained contexts, noting it "supports co-creation at scale" and would be "especially helpful for municipalities with limited capacity" by allowing project management, feedback, and proposal collection in one integrated platform. The ability to enable ongoing, asynchronous collaboration that lets stakeholders contribute anytime and continue conversations after live sessions addressed a key limitation of traditional participation methods.

Feasibility: Implementation and Operational Challenges

While the portal's technical capabilities were well-received, stakeholders identified significant adoption challenges. The primary concern was that "stakeholders may not log in unless incentivized," requiring strategic engagement approaches. Stakeholders emphasized the importance of showing participation impact—letting contributors know how their input is used through project updates or invitations to facility openings. The asynchronous functionality was seen as feasible, but sustaining engagement over time remained a critical challenge.

Viability: Business Model and Strategic Alignment

The portal's long-term viability depends on real-world validation. Stakeholders expressed eagerness to experiment but emphasized needing to "see pilot use cases, tangible results, and endorsements from credible organizations" before full adoption. The tool must demonstrate measurable value in actual municipal projects to justify investment and organizational change. Building a track record of successful implementations and securing endorsements from respected institutions would be crucial for establishing the portal as a standard tool in public sports infrastructure development. Without this validation, the portal risks remaining an interesting prototype rather than an operational solution.

"Tools like this can help a lot in making the right conversation together." - P8

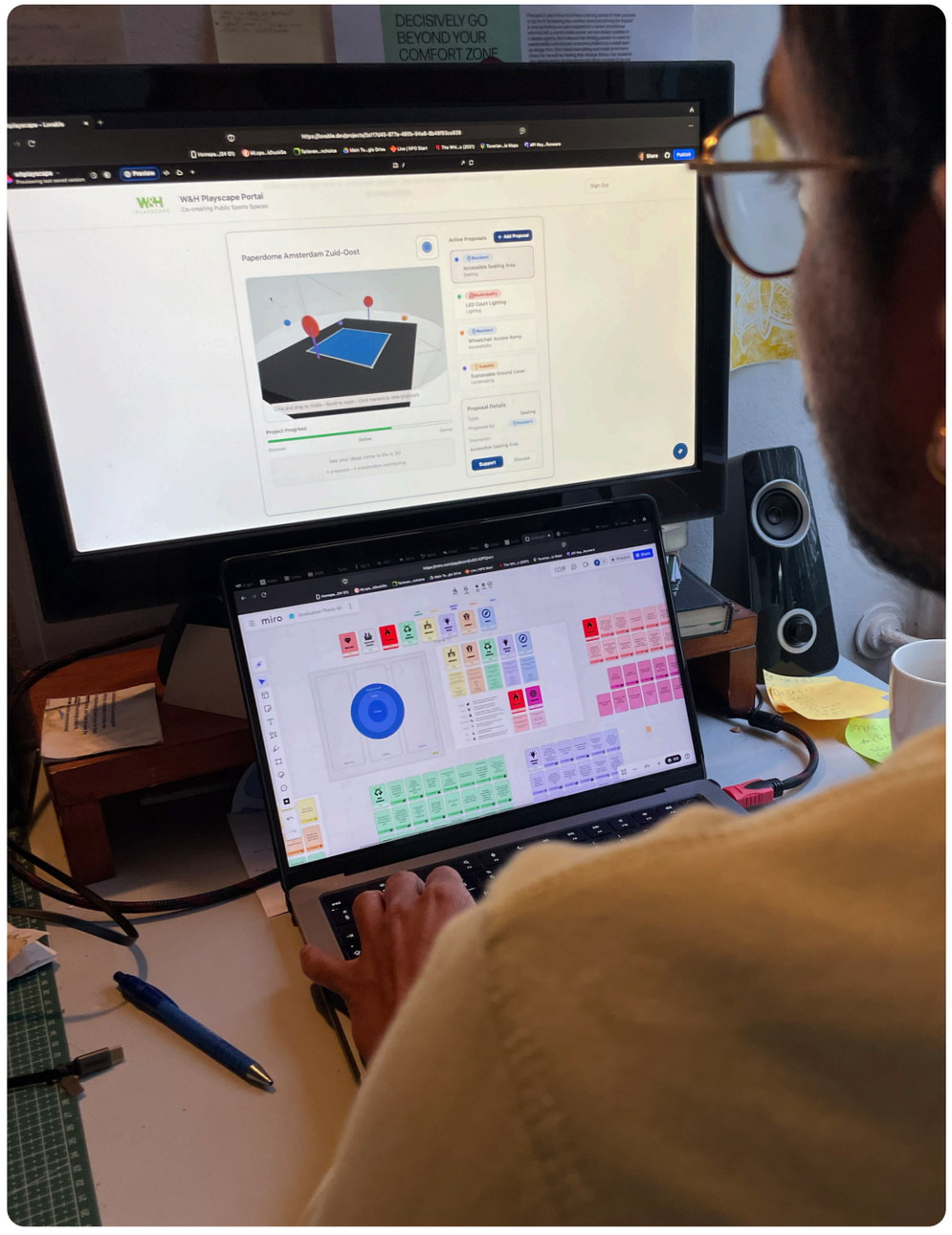


Figure 36: W&H Playscape portal evaluation

Chapter 6

Discussion

6.1 Recommendations

This section reflects on the outcomes of the project and outlines possible next steps for W&H Sports. The recommendations are based on insights from evaluations, client feedback, and personal reflection on what worked well and what could be strengthened.

Overall, this thesis shows that there are clear opportunities for growth and future development for sport suppliers through participatory innovation. For W&H Sports, this potential lies not only in improving tools such as the Playscape Toolkit, but also in how the organization embraces new ways of working guided by the transformation framework. The following recommendations highlight practical actions and strategic considerations to help ensure that participation becomes a lasting part of W&H Sports' innovation culture.

Participatory processes take time — and that time should be viewed as an investment, not a cost. The evaluations showed that while these sessions demand more coordination and preparation upfront, they lead to richer insights and stronger relationships that pay off over time. W&H Sports should continue to explore these methods and embrace that slower rhythm as part of the value they create, rather than as a delay. Moving forward, W&H Sports could benefit from developing testing environments or experience zones where people can interact directly with new sport concepts. These spaces make the process more visible, attract diverse voices, and help ground ideas in real-world use. It is equally important to keep them accessible — ensuring that everyday users, not just experts, can contribute their perspectives.

At the same time, W&H Sports should move away from assuming what users need or want and instead co-develop innovations with them. Too often, organizations focus on delivering impressive new products that communities don't identify with or know how to use. By involving people early and throughout the process, W&H can create innovations that are genuinely desired, understood, and valued — products that emerge from lived experience rather than distant assumptions.
The framework for transformation can guide this internal shift. It should evolve into a practical reference for identifying when and how to involve stakeholders, supported by training sessions and small-scale pilot projects.

Applying design-led or a startup mindset — testing, measuring, and iterating — will make innovation more tangible and repeatable. As suggested by Gert-Hans Berghuis (Berghuis, 2021), the idea of "Excel Sheet Validation" offers a way to translate abstract innovation goals into concrete, trackable actions, helping W&H Sports stay accountable to their ambitions.

In parallel, W&H Sports should actively embrace emerging technologies as part of this participatory approach. As tools such as AI, AR, and VR become more intuitive and accessible, they will make co-design processes faster, more visual, and less cumbersome. These technologies could allow communities to collaboratively design sport spaces in immersive 3D environments — a development that would place W&H Sports in an ideal position to lead innovation at the intersection of design, sport, and technology.

Ultimately, participation should be seen as part of W&H Sports' long-term identity, not an optional add-on. Making collaboration central to their culture and strategy will strengthen both their business and their social impact. With their strong network and trusted reputation, W&H Sports is well positioned to connect municipalities, foundations, and communities — and to design sport spaces that people truly want to use.

6.2 Limitations

While the outcomes of this project show strong potential for future impact, several limitations need to be acknowledged. Some are inherent to participatory design itself, while others stem from the practical realities of conducting this project within a limited timeframe and scale.

A first limitation lies in the nature of participatory methods. Participation depends entirely on the people involved — their time, motivation, and willingness to contribute. This makes it unpredictable by design. Some sessions can lead to deep discussion and actionable insights, while others may stall due to scheduling issues, lack of clarity, or uneven levels of engagement. Participation also takes time, and for organizations accustomed to quick delivery or measurable returns, this can feel inefficient. It requires a shift in mindset and expectations — something that takes more than a single project to achieve.

Another limitation relates to the balance between participation and the company's core business. The proposed shift toward facilitation and collaboration is exciting, but there's a fine line between exploring new ways of working and drifting too far from what W&H Sports does best. The company's strength lies in its expertise as a supplier and innovator in sports infrastructure, and so it should continue to do that.

The scale of the work also introduced constraints. Collaborating with municipalities and public partners can be slow and highly dependent on timing, politics, and capacity. True systemic change requires collective effort — not just from one company, but from a network of committed actors across cities, communities, and industries. While this project laid the groundwork for that dialogue, it also revealed how much coordination, alignment, and persistence are needed to make participatory innovation part of a larger public system, meaning that forming strategic partnerships will as important if not more than before.

From a project perspective, the scope and testing opportunities were also limited. Although the Playscape Toolkit and Portal were evaluated with the client, there was no opportunity to run a full-scale co-creation session involving community members or youth — a group that would have provided valuable insights, especially given the focus on public sport spaces. Similarly, while the prototypes demonstrated proof of concept, further testing in real-world environments would be needed to understand their usability, inclusivity, and long-term potential.

Finally, as with all participatory approaches, facilitation remains a key dependency. The success of a session often relies on having someone skilled in managing group dynamics, guiding conversations, and ensuring everyone feels heard. Without that structure, even the best-designed tools risk producing shallow or fragmented outcomes.

6.3 Conclusion

This project set out to explore how participatory design could strengthen the relationship between sport suppliers, municipalities, and communities. The hope was that in doing so, we could help bridge the disconnect that often exists between innovation and real-world use. What began as a design challenge gradually evolved into a deeper exploration of systems, relationships, and the role of design in shaping how people move and play together.

This thesis demonstrated that participation can serve as both a design approach and a strategic direction. By engaging stakeholders in co-creation, the project revealed a recurring cycle within public sport innovation and then proposed ways to break this cycle by repositioning W&H Sports as a facilitator — an organization that not only delivers sport infrastructure, but also connects people, ideas, and environments through collaboration for its innovation processes.

The resulting Playscape Toolkit embodies this shift and makes the activities and mindset for change more tangible: helping people articulate perspectives, visualize shared ideas, and turn conversation into action. While still in development, it represents a foundation for how sport innovation can become more inclusive, contextual, and adaptive to real community needs. The framework for transformation supports this shift internally, outlining how W&H Sports can integrate participation into its business culture without losing focus on its core strengths as a supplier.

The project also highlighted that this transition will take time. Participatory processes are slower, more relational, and less predictable than traditional business models. They require commitment, facilitation, and trust. Yet, they also create value that lasts longer: stronger networks, deeper understanding, and sport spaces that people actually want to use.

Looking ahead, the future of sport innovation will be shaped by how effectively technology and participation come together. As tools like AI, AR, and VR become more accessible, as shown in some of the processes used, and co-designing environments in real time will become easier and more immersive.

W&H Sports is well positioned to lead in this space — combining their technical expertise with a participatory mindset to create sport environments that are as engaging as they are meaningfu.

So this thesis is both a reflection and a proposition: that designing public sport spaces is not just about building courts or products, but about building relationships. When suppliers, municipalities, and communities work together, innovation becomes more human — and sport regains its role as a connector of people, places, and purpose.

Chapter 7

Reflection

7.1 Personal Reflection

This project took quite a different turn of events from what I initially envisioned. It moved quickly from understanding what the LED floor and tile could become, to exploring how these innovations could create a greater impact on society than just through the technology itself.

Working with stakeholders came very intuitively to me, probably because I'm a curious person who genuinely wants to understand others' perspectives. I'm really amazed by how many people are out there working hard to make our societies safer, more vital, and simply function better. It makes me glad that I chose to study strategic and systemic design.

I loved doing the design interventions — that was one of my favourite parts of the project. Visiting neighbourhoods as a non-resident, communicating (in my best Dutch) with people, explaining to them what I was doing, break my own stereotypes (yes, even I had some assumptions), and finding ways to connect. I have countless stories from my visits to the Paperdome, walking through the K-Buurt on a Friday afternoon, and observing the world around me. That kind of experience really scratches an itch as a designer.

I was also amazed at how one can suddenly find yourself at the forefront of innovation. It happened multiple times during the project that ideas we were exploring aligned perfectly with emerging industry trends, societal needs, or strategic shifts elsewhere — giving that buzzing feeling of "oh wow, this is really it!" To me, it's fascinating how a country like the Netherlands has the capital and resources to invest, yet the core of the problem remains deeply human. No matter how much money you throw at it - it won't fix itself. That's how I have come to view systemic design problems — they require confronting difficult truths, often wrapped in a non-threatening, almost simple box so they don't feel too overwhelming or scary to face.

This was a challenging yet rewarding experience. Working in a commercial environment isn't new to me, but viewing it through the lens of a designer gave me new insights into how companies think — even when they aim to create better products and services for society. It also showed me how open and clear the boundaries still are between entities, and how "collaboration" often means staying in your lane and avoiding risk. I often thought of the infamous Spider-Man meme, where all three are pointing at each other — that felt very familiar at times.

I truly enjoyed the process. Doing an internship in sports had been a dream of mine. I'm a huge sports enthusiast, and I deeply believe in the uniting power of sport. It's one of those rare things that brings people together in ways very few others can. I loved being able to design in an area I'm passionate about.

On top of that, I'm proud that I got to flex my full range of design skills — and learn new ones too. Working with AI, vibe coding, and using technology to create tangible outcomes was incredibly rewarding. I have to admit, I even surprised myself a little there.

This project really helped me understand what kind of designer I want to be — one who brings people together, who listens, and who designs not just for users, but with them. In the end, I think we all want to make this world a better place — whether that's in your backyard or your local club. And if we could just spend a little more time reconnecting as humans, I think we could go a very long way.

Chapter 8

References

References

#

3x3 Unites (n.d.). Retrieved from https://www.3x3unites.com/

A

Agenda Urban Sport 2021-2025. (2021). Openresearch.Amsterdam. Retreived from : https://openresearch.amsterdam/nl/page/73947/agenda-urban-sport-2021-2025

Akbar, P. N. G., & Edelenbos, J. (2021). Positioning place-making as a social process: A systematic literature review. Cogent Social Sciences, 7(1). https://doi.org/10.1080/23311886.2021.1905920

Albrechtsen, C. (2025). Playing With Data: A Board Game-Inspired Technique to Engage Local Stakeholders in Participatory Qualitative Analysis. Journal of Participatory Research Methods, 6(1). https://doi.org/10.35844/001c.127937

Aubert, A. H., McConville, J., Schmid, S., & Lienert, J. (2022). Gamifying and evaluating problem structuring: A card game workshop for generating decision objectives. EURO Journal on Decision Processes, 10, 100021

ASM International - Athletic Skills Model (ASM) (2025) Retrieved from https://www.athleticskillsmodel.nl/en/

B

Beckman, S. (2020). To Frame or Reframe: Where Might Design Thinking Research Go Next? California Management Review. https://doi.org/10.1177/0008125620906620

Berghuis, G. H. (2021). Excelsheet-driven validation. Medium. https://gerthansberghuis.medium.com/excelsheet-driven-validation-ad6f53b83ecc

Block, K., Molyneaux, R., & Young, D. (2025). Sport as a social capital intervention promoting health and well-being for migrant youth in Australia. Health promotion international, 40(3), daaf051. https://doi.org/10.1093/heapro/daaf051

Book, K. (2025). Recreation- and sport-led regeneration of urban water infrastructure. Frontiers in Sports and Active Living, 7. https://doi.org/10.3389/fspor.2025.1558415

Boudreau, M. (2023). Sim Racing is Breaking Down Barriers in Motorsport - Motorsport Prospects. Motorsport Prospects. https://www.motorsportprospects.com/sim-racing-is-breaking-down-barriers-in-motorsport/

Bourgonjon, J., Valcke, M., Soetaert, R., & Schellens, T. (2010). Students' perceptions about the use of video games in the classroom. Computers & Education, 54(4), 1145–1156.

Brandt, E., & Messeter, J. (2004). Facilitating Collaboration through Design Games. Proceedings of the Eighth Conference on Participatory Design: Artful Integration: Interweaving Media, Materials and Practices – PDC 04, 1, 121. https://doi.org/10.1145/1011870.1011885

C

Caperna, Antonio & Salingaros, Nikos & Bauwens, Michel & Brain, David & Duany, Andrés & Mehaffy, Michael & Mehta, Geeta & Mena-Quintero, Federico & Philibert, Ernesto & Rizzo, Agatino & Serafini, Stefano & Strano, Emanuele. (2011). Peer to Peer Urbanism by Nikos A. Salingaros. 10.13140/2.1.1162.2401.

Cardenas, A. (2016). Sport and Peace-Building in Divided Societies: A Case Study on Colombia and Northern Ireland," Peace and Conflict Studies: Vol. 23: No. 2, Article 4. DOI: 10.46743/1082-7307/2016.1321

Casey M, Doherty A, Elliott SK and Norman L (2022) Editorial: Engaging Women and Girls in Community Sport: Building an Equitable and Inclusive Future. Front. Sports Act. Living 4:947626. doi: 10.3389/fspor.2022.947626

Chelladurai, P. (2009). Managing organizations for sport and physical activity: A systems perspective. Scottsdale: Holcomb-Hathaway.

Clarke, F., Jones, A., & Smith, L. (2021). Building Peace through Sports Projects: A Scoping Review. Sustainability, 13(4), 2129. https://doi.org/10.3390/su13042129

Coalter, F.A. (2007) A Wider Social Role for Sport: Who's Keeping the Score? Taylor & Francis, London.

Cruyff Foundation. (n.d.) Johan Cruyff Foundation. Retreived from https://www.cruyff-foundation.org/en/

D

de Boer, W., Viluma, L., & Mierau, J. (2025). De relatie tussen sport en bewegen en sociaaleconomische verschillen in zorgkosten: Voor de gemeenten Amsterdam en Rotterdam. University of Groningen.

De Jans, S., Van Geit, K., Cauberghe, V., Hudders, L., & De Veirman, M. (2017). Using games to raise awareness: How to co-design serious mini-games? Computers & Education, 110, 77–87.

Delbeeke, L. (2022). GIRLS MAKE THE CITY (ENG) - zijkant. Zijkant. https://www.zijkant.be/girls-make-the-city-eng/

Deloitte Insights (2025). 2025 global sports industry outlook. https://www.deloitte.com/us/en/insights/industry/technology/technology-media-telecom-outlooks/sports-industry-outlook.html

Denzin, N. K. (2017). The research act: A theoretical introduction to sociological methods. Routledge.

Dembrane - Mensen maken kennis. (z.d.). https://www.dembrane.com/nl-NL

Design Council (2005). A Study of the Design Process—The Double Diamond. https://www.designcouncil.org.uk/sites/default/files/asset/document/ElevenLessons_Design_Council%20(2).pdf

E

Ekholm, D. (2016). Sport as a means of responding to social problems rationales of government, welfare and social change. Linkopings Universitet (Sweden).

Elling, A. & Knoppers, Annelies & Knop, Paul. (2001). The social meaning of sport: A critical and comparative analysis of policy and practice in the Netherlands.. Sociology of Sport Journal. 18. 10.1123/ssj.18.4.414.

Elling, A., Van Hilvoorde, I., & Van Den Dool, R. (2012). Creating or awakening national pride through sporting success: A longitudinal study on macro effects in the Netherlands. International Review for the Sociology of Sport, 49(2), 129-151. https://doi.org/10.1177/1012690212455961

European Commission: Directorate-General for Education, Youth, Sport and Culture & KEA European Affairs. (2021). Mapping of innovative practices in the EU to promote sport outside of traditional structures : final report to the European Commission. Publications Office. https://data.europa.eu/doi/10.2766/063092

European Commission. SHARE 2.0 initiative (2025). Retrieved from https://sport.ec.europa.eu/initiatives/share-20

F

Faroudi, P., Jin, Z., Gupta, S., Melewar, T., & Faroudi, M. (2016). Influence of innovation capability and customer experience on reputation and loyalty. Journal of Business Research, 69, 4882–4889.

Faber, I. R., De Greeff, J. W., Bostelaar, A., & Schipper-van Veldhoven, N. (2023). What moves youth?—A survey to explore the motivation and barriers of Dutch young adolescents (12–15 years) to participate in sports. Youth, 3(3), 835–846. https://doi.org/10.3390/youth3030054

Fram-Schwartz, N. (2025). Top 14 sports trends of 2025. Glimpse. https://meetglimpse.com/trends/sports-trends/

Freepik. (2025). Freepik - free graphic resources for everyone. Freepik. https://www.freepik.com/

G

GAME's Participatory Design Principles - GAME Denmark. (2023). GAME Denmark. https://game.ngo/what-we-do/design-principles/

GAME Denmark - International NGO. (2025). GAME Denmark. https://game.ngo/

Gemeente Amsterdam (2021). Agenda urban sports 2021-2025 Amsterdam: de stad als speelveld, je lichaam als instrument. Amsterdam: Gemeente Amsterdam.

Giulianotti, R. (2010). Sport, peacemaking and conflict resolution: a contextual analysis and modelling of the sport, development and peace sector. Ethnic and Racial Studies, 34(2), 207–228. https://doi.org/10.1080/01419870.2010.522245

Global Insight News (2025). Why Gen Z's Second Screen Habits Are The Top Trends to Watch in Sports (2025). Retrieved from https://global-insight-news.com/gen-z-second-screen-sports-viewing-trends/

Groß, B., & Mandir, E. (2024). Designing futures: Speculation, Critique, Innovation.

Guram, H. (2021). Are we losing the Generation Z sports fan. . .how can Technology help. https://www.linkedin.com/pulse/we-losing-generation-z-sports-fanhow-can-technology-help-harbir-guram/

GWI. (2025). 7 sports viewership trends in 2025. GWI. https://www.gwi.com/blog/sports-viewership-trends

Gyuró, K. (2024). How to Maximize Your Pre-Season with SmartGoals SkillGames — SmartGoals. https://www.smartgoals.nl/blog/how-to-maximize-your-pre-season-with-smartgoals-skillgames

H

Heijne, K., & Van Der Meer, H. (2019). Road map for creative problem solving techniques: organizing and facilitating group sessions.

Houlihan, B. (2005). Public sector sport policy. International Review for the Sociology of Sport, 40(2), 163–185.

Hoyng, J., & Scholte, D. (2021). Physical Activity Friendly Environment model. Ede: Knowledge Centre for Sport & Physical Activity Netherlands. Retrieved from : https://www.kenniscentrumsportenbewegen.nl/kennisbank/publicaties/?physical-activity-friendly-environment-model&kb_id=26376&kb_q=

Hoyng, J., & Baartmans, S. (2023). Gemeenten maken werk van Urban Sports. Utrecht: Kenniscentrum Sport & Bewegen. Retrieved from https://www.mulierinstituut.nl/publicaties/27494/gemeenten-maken-werk-van-urban-sports/

I

IBM. (2025, April 8). What is Vibe Coding? IBM. Retrieved from https://www.ibm.com/think/topics/vibe-coding

J

Jackson, S. F. (2008). A participatory group process to analyze qualitative data. Progress in Community Health Partnerships: Research, Education, and Action, 2(2), 161–170. https://doi.org/10.1353/cpr.0.0010

Jean, S., Medema, W., Adamowski, J., Chew, C., Delaney, P., & Wals, A. (2018). Serious games as a catalyst for boundary crossing, collaboration and knowledge co-creation in a watershed governance context. Journal of Environmental Management, 223, 1010–1022. https://doi.org/10.1016/j.jenvman.2018.05.021

Jensen, T. W., & Jensen, G. S. (2011). Engaging students in the peer-feedback process – improved peer-feedback on texts through the conceptualization of a board game. Proceedings of ICERI2011 Conference

K

Kaczynski, A.T. and Henderson, K.A. (2007) Environmental Correlates of Physical Activity: A Review of Evidence about Parks and Recreation. Leisure Sciences, 29, 315-354. https://doi.org/10.1080/01490400701394865

Karstensen ,V., Piskorz-Ryń, O., Karna, W., Lee, A., Neo, X.S., & Gottschlich, D. (2024). The Role of Sports in Promoting Social Inclusion and Health in Marginalized Communities. International Journal of Sport Studies for Health, 7(3), 41-48. https://doi.org/10.61838/kman.intjssh.7.3.6

Krajicek Foundation. (n.d.). Retrieved from https://krajicek.nl/

L

Li, C., Li, D., & Huang, C. (2024). Innovations in Sports Industry: Trends and Transformations. Psychology of Sport & Exercise, 75, 112416.

LINES by CityLegends. (n.d.). (urban) straatsport en -cultuur. Retrieved from https://www.lines.citylegends.io/

Lioce, R. (2023). Sports spark change: Transforming urban environments with teens. Urbact.eu. https://urbact.eu/whats-new/stories/sports-transforming-urban-environments

Lioce, R. (2024a). Can Urban Sports Hubs Transform Youths Communities and Regenerate Urban Public Spaces? Urbact.eu. https://urbact.eu/articles/can-urban-sports-hubs-transform-youths-communities-and-regenerate-urban-public-spaces

Lioce, R. (2024b). Sportsgrounds of the Future: How Cities Are Rethinking Public Space for Adolescents' Wellbeing. Urbact.eu. https://urbact.eu/articles/sportsgrounds-future-how-cities-are-rethinking-public-space-adolescents-wellbeing

Lioce, R. (2025a). Sport Urbanism: A New Paradigm for Urban Regeneration and Sustainable, Beautiful Cities for All. Urbact.eu. https://urbact.eu/articles/sport-urbanism-new-paradigm-urban-regeneration-and-sustainable-beautiful-cities-all

Lioce, R. (2025b). Street Sport and Tourism: A Path to Urban Regeneration and Youth-Centered Travel. Urbact.eu. https://urbact.eu/articles/street-sport-and-tourism-path-urban-regeneration-and-youth-centered-travel

Lioce, R. (2025c). Teenagers and the City: How Youth Shape Public Spaces through Creativity, Sports, and Social Connection. Urbact.eu. https://urbact.eu/articles/teenagers-and-city-how-youth-shape-public-spaces-through-creativity-sports-and-social

M

Make Space For Girls. Research Report 2023. (n.d). Retrieved from https://www.makespaceforgirls.co.uk/resources/research-report-2023

Marlier, M., Van Dyck, D., Cardon, G., De Bourdeaudhuij, I., Babiak, K., & Willem, A. (2015). Interrelation of Sport Participation, Physical Activity, Social Capital and Mental Health in Disadvantaged Communities: A SEM-Analysis. PloS one, 10(10), e0140196. https://doi.org/10.1371/journal.pone.0140196

Mendelow, A. (1991). Stakeholder mapping. In Proceedings of the 2nd International Conference on Information Systems, Cambridge, MA, U.S.A.

Ministerie van Volksgezondheid, Welzijn en Sport. (2014). Research and innovation in sport. Sports And Physical Activity |https://www.government.nl/topics/sports/research-and-innovation-in-sport

Moustakas, L. (2022). Sport for Social Cohesion: Transferring from the Pitch to the Community? Social Sciences, 11(11), 513. https://doi.org/10.3390/socsci11110513

Moustakas, L., & Robrade, D. (2022). Sport for social cohesion: from scoping review to new research directions. Sport in Society, 26(8), 1301–1318. https://doi.org/10.1080/17430437.2022.2130049

Mueller, J., Lu, H., Chirkin, A., Klein, B., & Schmitt, G. (2018). Citizen Design Science: A strategy for crowd-creative urban design. Cities, 72, 181-188.

N

Nesse, M., Agergaard, S., & Piggott, L. V. (2023). Young refugees' experiences of accumulating horizontal and vertical social capital through organised and informal sports. International Review for the Sociology of Sport, 59(5), 642-659. https://doi.org/10.1177/10126902231217941

New Voices Under 30: What impact does Gen Z's sports viewing habits have on live events? (2024). Sports Business Journal. https://www.sportsbusinessjournal.com/Articles/2024/11/11/new-voices-under-30-gen-z-impact/

Nielsen Sports. (2020). Why Gen Z is challenging the notion of the "hard-core" sports fan. Nielsen Sports. https://nielsensports.com/why-gen-z-is-challenging-the-notion-of-the-hard-core-sports-fan/

Nielsen. (2025). 2025 global sports report. Nielsen Insights. https://www.nielsen.com/insights/2025/global-sports-report-2025/

NOC*NSF. (2023). Dutch Sport's Strategic Plan 2032. Retrieved from https://cdn.nocnsf.nl/media/4dpanj5w/dutch-sports-strategic-plan-2032.pdf

O

Omgevingswet (2025). Retrieved from http://wetten.overheid.nl/jci1.3:c:BWBR0037885

P

Panton, M. & Walters, G. (2019). 'It's just a Trojan horse for gentrification': austerity and stadium-led regeneration. 10.4324/9780429057625-11.
Parsamyan, N., & Orłowski, A. (2024). How Sport Innovations Can Shape Sustainable Cities: An Interdisciplinary Approach. Problemy Ekorozwoju, 19, 228-241. https://doi.org/10.35784/preko.5663

Pellegrini MM, Rialti R, Marzi G, Caputo A (2020) Sport entrepreneurship: a synthesis of existing literature and future perspectives. Int Entrep Manag J 16(3):795–826. https://doi.org/10.1007/s11365-020-00650-5

Previati, A. (2020). The importance of fan engagement and fan management in sports. St. John's University (New York).

PwC. (2025). Sports industry outlook 2025. PwC Insights. https://www.pwc.com/us/en/industries/tmt/library/sports-outlook-north-america.html

R

Ratten, V. (2011). Sport-based entrepreneurship: towards a new theory of entrepreneurship and sport management. International entrepreneurship and management journal, 7(1), 57-69.
Ratten, V. (2019). Sports Technology and Innovation: Assessing Cultural and Social Factors. Sports Technology and Innovation.

Riffi Acharki, E., Spaaij, R., & Nieuwelink, H. (2021). Social inclusion through sport? Pedagogical perspectives of Dutch youth sport coaches. Sport, Education and Society, 28(2), 144–158. https://doi.org/10.1080/13573322.2021.2006174

Rowe, D. (2012). Global media sport: Flows, forms and futures. Bloomsbury Academic.

S

Sanders, EBN., & Stappers, PJ. (2012). Convivial toolbox: Generative research for the front end of design. BIS.

Schulenkorf, N. (2012). Sustainable Community Development through Sport and Events: A Conceptual Framework for Sport-for-Development Projects. Sport Management Review. 15. 10.1016/j.smr.2011.06.001

SHARE 2.0 (2025). Sport. Retrieved from https://sport.ec.europa.eu/initiatives/share-20

Shilbury, D., O'Boyle, I., & Ferkins, L. (2016). Toward a research agenda in collaborative sport governance. Sport Management Review, 19, 479–491.

Simmons, D. (2018). Social Cohesion and Sport in Overijssel : A Social Network Analysis.

Spaaij, R. (2009). The glue that holds the community together? Sport and sustainability in rural Australia. Sport in Society, 12(9), 1132–1146. https://doi.org/10.1080/17430430903137787

Spaaij, R. (2009). Sport as a Vehicle for Social Mobility and Regulation of Disadvantaged Urban Youth: Lessons from Rotterdam. International Review for the Sociology of Sport, 44(2-3), 247-264. https://doi.org/10.1177/1012690209338415

Strain, T., Flaxman, S., Guthold, R., Semenova, E., Cowan, M., Riley, L. M. et al. (2024). National, Regional, and Global Trends in Insufficient Physical Activity among Adults from 2000 to 2022: A Pooled Analysis of 507 Population-Based Surveys with 5.7 Million Participants. The Lancet Global Health, 12, e1232-e1243. https://doi.org/10.1016/S2214-109X(24)00150-5

T

Takken, T., de Jong, N., & on behalf of the Dutch Physical Activity Report Card Study Group. (2018). Results From the Netherlands' 2018 Report Card on Physical Activity for Children and Youth. Journal of Physical Activity and Health, 15(s2), S388-S389. https://doi.org/10.1123/jpah.2018-0513

Thibodeau, D. (2020, June 03). LGBTQ+ inclusion in sports. Sport and Dev. https://www.sportanddev.org/en/article/news/lgbtq-inclusion-sports

Tjønndal, A. (2016). Sport, Innovation and Strategic Management: A Systematic Literature Review. Brazilian Business Review. 13. 38-56. 10.15728/edicaoesp.2016.3

Toma, A. (2025). Nine URBACT Good Practices fostering regenerative cities. Urbact.eu. https://urbact.eu/whats-new/articles/nine-urbact-good-practices-fostering-regenerative-cities

U

UDG. (n.d.). Urbandanceground.nl. https://www.urbandanceground.nl/

UI Bakery. (2025). What is Lovable AI? A Deep Dive into the Builder. UI Bakery. Retrieved from https://uibakery.io/blog/what-is-lovable-ai

United Nations. (2003). Sport for development and peace: Towards achieving the Millennium Development Goals. United Nations Office on Sport for Development and Peace.

URBACT (z.d.). Retrieved from https://urbact.eu/
Urbact. (2021). Re-Gen | urbact.eu. Urbact.eu. https://urbact.eu/networks/re-gen

V

Valle, D.C., & Kompier, V. (2013). Sport in the City. Research on the relation between sport and urban design. Rotterdam: Creative Industries Fund. Research Paper. Cultural touristic city centre.
van Boeijen, A. G. C., Daalhuizen, J. J., & Zijlstra, J. (2020). Delft Design Guide: Perspectives, models, approaches, methods. (2nd ed.) BIS Publishers. https://www.bispublishers.com/delft-design-guide-revised.html

van Haaften, A. F. (2019). Ethnic participation in Dutch amateur football clubs. European Journal for Sport and Society, 16(4), 301–322. https://doi.org/10.1080/16138171.2019.1693144

Verhagen, Stijn & Boonstra, N.. (2014). Bridging social capital through sports: an explorative study on (improving) inter-ethnic contact at two soccer clubs in the Netherlands. Journal of Social Intervention: Theory and Practice. 23. 23. 10.18352/jsi.423.

Veselý, A. (2008). Problem Tree: A Problem Structuring Heuristic. Central European Journal of Public Policy. 2.

W

W&H Play. (2025). W&H Play. Whplay.nl. https://whplay.nl/

World Health Organization: WHO. (2024). Nearly 1.8 billion adults at risk of disease from not doing enough physical activity. World Health Organization. https://www.who.int/news/item/26-06-2024-nearly-1.8-billion-adults-at-risk-of-disease-from-not-doing-enough-physical-activity

Winand, M., Scheerder, J., Vos, S., & Zintz, T. (2016). Do non-profit sport organisations innovate? Types and preferences of service innovation within regional sport federations. Innovation, 18(3), 289–308. https://doi.org/10.1080/14479338.2016.1235985

WSDH. (n,d). WSDH. Retreived from https://www.swsdh.nl/

Wu, C. (2025). The impact of sports industry output on economic growth: evidence from China. Journal of the Knowledge Economy, 16(2), 8420-8440.

Y

Yan C (2023). A Study on Key Factors in the Innovation and Development of Sports. Industrial Engineering and Innovation Management (2023) Vol. 6: 155-161. DOI: http://dx.doi.org/10.23977/ieim.2023.061020

Young, D., Block, K., & Gibbs, L. (2024). Developing social capital through sport? The case for an intersectional lens. International Review for the Sociology of Sport, 60(4), 634-649. https://doi.org/10.1177/10126902241278743

Z

Zhang JJ, Kim E, Mastromartino B, Qian TY, Nauright J (2018) The sport industry in growing economies: critical issues and challenges. Int J Sports Mark Spons 19(2):110–126. https://doi.org/10.1108/IJSMS-03-2018-0023

Zhou, 2014 Zhou, Q. (2014). The Princess in the Castle: Challenging Serious Game Play for Integrated Policy Analysis and Planning. TU Delft, The Netherlands.

Note on use of images;
All images I used from reports have been referenced in the list above, the rest are mine that I took myself.
I used some icons in creating the cards, and those were all taken from the open source, free for use website Freepik (Freepik. (2025).