



# Irish Immersive Technology Strategy for Growth

Promoting Ireland's Digital Transformation

MAY 2024



# Acknowledgements

## Cultural & Creative Industries Skillnet

Cultural & Creative Industries Skillnet (CCIS) is a business network for companies of all sizes, including freelancers, in the creative and cultural ecosystem in Ireland. Cultural & Creative Industries Skillnet designs, develops and delivers responsive, bespoke, flexible and relevant skills and talent development programmes to address the ongoing needs of the cultural & creative sectors. This network was established in January 2023 as a consolidation and expansion of three existing Skillnet networks (Animation Skillnet, Screen Skillnet and Immersive Technologies Skillnet).

The objective of this national network is to support the growth of Ireland's animation, visual effects, games, film, TV, documentary, post-production, immersive technologies, AR/VR, virtual production, digital media, entertainment events, music, performing arts and visual arts sectors, through the provision of bespoke training and professional networking events.

## Eirmersive

Eirmersive is the voice of the Immersive Sector in Ireland. The organisation's mission is to:

- Enable the opportunity for immersive technology to be an enabler and catalyst for transformation and new business growth in Ireland.
- Position Ireland as a global player in the immersive technology sector through connecting our thriving high growth, hi-tech enterprise and start-up ecosystem to facilitate transformational change.

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The authors would like to acknowledge the support provided by Gareth Lee and Susan Talbot at Cultural and Creative Industries Skillnet, and by James Corbett and Camille Donegan at Eirmersive.

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# Foreword

The Irish immersive technology sector is bustling with talent and encompasses businesses at the forefront of augmented reality, virtual reality, spatial computing, and mixed reality. As these technologies continue to evolve so too do the requisite skills required to drive creativity and innovation.

This publication by Cultural & Creative Industries Skillnet aims to contribute to ensuring Ireland remains a global leader in the immersive technology sector now and into the future. Designed to support the Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media's Digital Creative Industries Roadmap, the report demonstrates how workforce development remains a key priority for businesses within the sector across Ireland.

By engaging with industry experts, the report offers a comprehensive examination of both the opportunities and challenges associated with developing a vibrant immersive technology sector. It also emphasises the value and significance of collaboration across many different stakeholders to foster an effective talent development ecosystem. This collaboration will drive knowledge exchange, sectoral visibility and industry-academic partnerships all of which are essential for propelling skills and capabilities needed for the growth and advancement of the immersive technology sector.

On behalf of Skillnet Ireland, I would like to acknowledge all of those who contributed to this research report. Particular thanks are due to the many enterprises, employees and stakeholders who contributed their time and efforts. In addition, I also want to thank the Cultural & Creative Industries Skillnet as well as the project steering group for their valuable insights and support. Finally, to Eirmersive for their research expertise and in bringing this report to a successful conclusion.



Tracey Donnery  
Director of Communications and Policy  
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# Executive Summary

The nascent Irish immersive technology sector, including organisations that generate over €92 million annually, is building an international presence. The Irish Immersive Economy report 2022 showed that the Irish immersive technology sector was worth over €43 million.<sup>1</sup> There is a significant opportunity for Ireland to be a leading player in the global immersive technology market, currently valued at \$65.5 billion in 2022 and expected to grow to \$936.6 billion by 2030.<sup>2</sup> This includes augmented reality (AR), virtual reality (VR), spatial computing, and mixed reality (MR), collectively referred to as extended reality (XR).

Following recommendations from the Irish Immersive Economy report 2022, to drive the sustainable growth of the immersive technologies sector in Ireland, Cultural & Creative Industries Skillnet (CCIS) and Eirmersive have produced a comprehensive Irish Immersive Technology Strategy for Growth (IITSG).<sup>3</sup>

There are clear barriers to growth. Without significant short-term strategic support to accelerate the momentum that the Irish immersive technology sector is creating, Ireland risks missing out on taking a significant place in the global immersive technology economy/market. This is especially critical in 2024 as other European countries are committing to investing time and resources into near-term and long-term strategies for their domestic sectors, including Finland's recently launched "Finnish Metaverse Initiative".<sup>4</sup>

The IITSG was prepared with input from stakeholders across the Irish domestic ecosystem, including industry, government, large enterprise, SMEs, research and education. It is expected to be updated on a regular basis following publication of this report.





# Key Findings and Recommendations

Research conducted from June to September 2023 highlighted several key areas to address:

Key Findings	Recommendations
<p><b>Limiting Potential</b></p> <p>A complex set of barriers to growth limit the potential of indigenous companies.</p>	<p><b>Cross-Sector Input</b></p> <p>An independent, cross-sector advisory group, supported by Cultural &amp; Creative Industries Skillnet and a relevant industry partner, should input into the recently launched Digital Creative Industries Roadmap and future national campaigns, facilitated by the Department of Enterprise Trade and Employment.</p> <p>This is required to ensure adequate representation from cross-sector interests in the immersive technology sector, and to work with national support agencies to address the wider issues identified in this report.</p>
<p><b>Skills Challenge</b></p> <p>We have a talent and skills challenge which undermines the stability of businesses.</p>	<p><b>Immersive Skills Advisory Group</b></p> <p>A national immersive skills advisory group should be established by Cultural &amp; Creative Industries Skillnet, with the support of a relevant industry partner, by the end of 2024, with cross-functional and cross-sector stakeholders represented.</p>
<p><b>Disconnected Ecosystems</b></p> <p>A disconnected ecosystem further fragments opportunities.</p>	<p><b>Cross-Sector Working Groups</b></p> <p>A disconnected yet highly motivated immersive technology sector further fragments opportunities to drive research, IP development, company growth and innovation. Dedicated working groups that prioritise the gaps and barriers identified in this report will create an opportunity to bring together the right knowledge and expertise to better understand and address these challenges in detail and scope future solutions.</p> <p>These Working Groups, to be established by an independent, cross-sector advisory group, supported by Cultural &amp; Creative Industries Skillnet and Eirmersive. Priorities identified to date include bridging gaps between Higher Education &amp; Industry, Funding &amp; Finance, Diversity &amp; Inclusion, and R&amp;D.</p>
<p><b>Awareness Challenge</b></p> <p>Lack of awareness is stifling innovation.</p>	<p><b>Building an aware and engaged ecosystem from the ground up</b></p> <p>An independent, cross-sector advisory group, supported by Cultural &amp; Creative Industries Skillnet and a relevant industry partner, should lead a series of cross-sector creative and industry campaigns over the next 12 months.</p> <p>This is a requirement to lead on connecting the ecosystem, to establish a means to bring disparate stakeholders together to share market, funding, business growth and talent development opportunities. Connecting and brokering new relationships will incentivise collaboration and drive meaningful, sustainable growth and impact.</p> <p>These campaigns would prioritise the gaps and barriers identified in this report.</p>

# Strategy Development

This body of work provides a strategy to support the further development of the Immersive technology sector in Ireland. The goal from the outset has been to support a cohesive, joined-up approach in assigning responsibility for effective implementation.

The strategy aims to implement the vision for Ireland to be a top tier destination for innovation in immersive technology and for the domestic market to grow and compete in a quickly accelerating global market.

The research intention was to:

- ▶ Collect data to better understand the current and future challenges, needs and opportunities within the immersive technology sector home market.
- ▶ Use this data/intelligence to create the Irish Immersive Technology Strategy for Growth (IITSG) which maps further actions to address the challenges stifling sector growth.
- ▶ The shared vision must be to raise immersive technology leadership across national stakeholders as a national priority, delivering on the opportunity for Ireland's stake in the global economy.

## Methodology

### Intelligence gathering

Conducted a survey (77 respondents) to capture business intelligence and activity in sector, challenges & opportunities, and the impact of emerging technology trends in 2023 such as spatial computing/XR and AI.

### Review

We reviewed the 2022 Report including recommendations, and used survey findings to cross check what recommendations are currently relevant, what needs updating, what is new and we created an updated set of recommendations to capture the ambition and intention of the Irish domestic ecosystem.

We reviewed ecosystem developments, growth in activity and in disruption, including the impact of AI/LLMs as presented in the survey and covered developments in Ireland since the 2022 report.

Using the above we found 3-4 clear areas which need to be addressed in future roadmap activities, as well as informing the recommendations.

## Ratification

Used the above data as a baseline for industry consultation in focus groups (4 sessions including 24+ representative organisations spread across industry, government and academic institutions). In the sessions, we used the above data to ratify the findings with attendees. Translate the ambition from the survey and roundtables to input into the business case for the immersive technology strategy.

## Schedule

1. Background Research and Stakeholder Identification
2. Data Collection
3. Data Analysis
4. Roadmap Strategy Development
5. Finalisation and Delivery

## Glossary

For the purpose of this report, we refer to the following terms frequently:

- ▶ **Augmented Reality (AR)** Presents digital information, objects or media in the physical world through a mobile device or headset.
- ▶ **Extended Reality (XR)** The full spectrum of technologies and experiences from the partly digital world of AR to the fully immersive experience of VR.
- ▶ **Immersive Technology/Technologies** is an umbrella term covering XR, VR, AR, MR and associated immersive technologies.
- ▶ **Metaverse:** The metaverse is a collective virtual space where people can interact with each other and with computer-generated environments and objects. It's a world where the digital and physical converge, with technologies to support.
- ▶ **Spatial Computing:** Spatial Computing enables computers to interact with objects and environments in 3D space. It allows devices to understand and navigate the world around them, making technology more intuitive and natural to use.
- ▶ **Virtual Reality (VR)** Immerses you in a fully digital environment, either computer generated or recorded from the physical world, through a headset or surrounding Display.

Full glossary can be found at Appendix A.



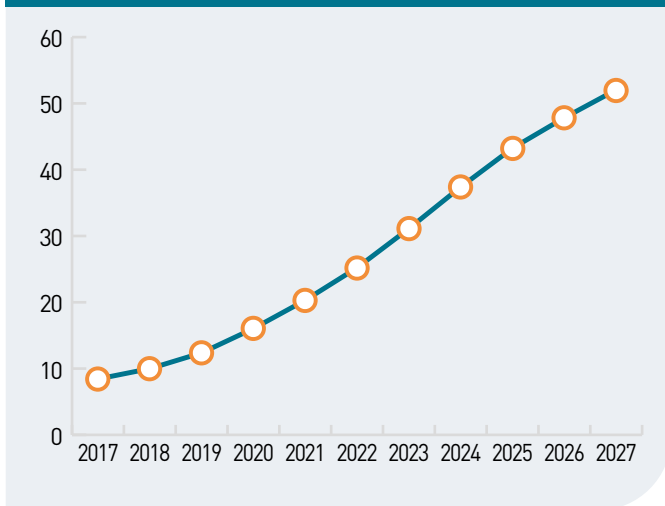


# Global XR Market

## Global XR Market

The global immersive technology sector, encompassing augmented reality (AR), virtual reality (VR), spatial computing, and mixed reality (MR), collectively referred to as extended reality (XR), is currently valued at \$31.1 billion as of 2023. Despite varying public perception and adoption rates, the trajectory of the XR market is unmistakably upwards, evidencing a strong growth pattern. This sector is not only expanding swiftly but is also becoming a magnet for substantial investments.<sup>5</sup>

**FIGURE 1** ▶ AR/VR B2C market revenue worldwide from 2017 to 2027 (US\$, Billions)



The immersive technologies market has experienced several peaks of heightened interest in the past years, marked by significant industry milestones. Key events that have shaped the market include:

- ▶ The acquisition of Oculus by Facebook, indicating big tech’s vested interest in the potential of immersive technologies.<sup>6</sup>
- ▶ The global pandemic, which has altered societal operation norms and accelerated the demand for virtual solutions.<sup>7</sup>
- ▶ The strategic rebranding of Facebook to Meta, highlighting its commitment to developing the Metaverse as a new digital frontier.<sup>8</sup>
- ▶ Apple’s market entry with the release of Vision Pro, expanding the competitive landscape.<sup>9</sup>
- ▶ The intensified efforts and product launches by established tech giants such as Meta, Pico, HTC, and Samsung, which have been crucial in driving the market forward.<sup>10</sup>

These developments underline the industry’s dynamism and the broader economic and technological trends fuelling the immersive technology market’s expansion.

## Key Drivers for Change

### Technology Adoption

In recent years, the landscape of immersive technology and digital engagement has been evolving at a remarkable pace. This change has been predominantly driven by a surge in the adoption of the technology. Notably, headset sales have been on an upward trajectory for the fifth consecutive year, signalling a growing interest in virtual experiences.<sup>11</sup>



## Geographic Interest

Central to this shift is the burgeoning interest in immersive technology, the metaverse, and XR (Extended Reality). In 2023, the European Commission took a significant step by announcing plans to develop a comprehensive strategy for these new virtual environments. The Commission's focus is not only on fostering the growth of metaverses but also on ensuring they align with digital rights and adhere to EU regulations and principles. This initiative, which is set to be released soon, aims to address both the potential benefits and societal implications of these technologies, charting a course for future actions.<sup>12</sup>

## Brand Interest

Parallel to these developments, there has been a noticeable increase in brand marketing and engagement leveraging immersive technology. This trend encompasses social and influencer marketing, which are rapidly integrating these advanced digital tools.<sup>13</sup> From Nike to AI influencers, brands are beginning to explore, learn and engage with the art of the possible, as well as issues such as verification which are becoming apparent.<sup>14</sup>

## Technology Advances

In 2024, the market for extended, virtual, augmented, mixed reality and spatial computing is poised for significant growth. This optimism is fuelled by anticipated improvements in processing capabilities, network connections, and the availability of market products in the technology.<sup>15</sup> Furthermore, the impact of immersive technology as a disruptive force is increasingly apparent in key global markets, including health and training.<sup>16</sup> The increased democratisation and automation of workflows, coupled with advancements in AI and machine learning, are enhancing the quality and speed of production, enabling potential revolution in these sectors.<sup>17</sup>

## Market Readiness

Market readiness is also escalating as early adopters begin to embrace headsets to access solutions and early versions of the "Metaverse." This is evident in the burgeoning communities, which boast tens of millions of active users and players.<sup>18</sup> Several verticals are already demonstrating success in this new era, notably social, fitness, and virtual learning. Early success stories like [Rec Room](#), [Engage \(Waterford\)](#) and [SideQuest \(Belfast\)](#), are exemplary of this trend. Established technology companies, such as Apple, have released their first product in the space, the Vision Pro, which sold out shortly after pre-orders opened on February 2nd.<sup>19</sup> While this is not an iPhone moment i.e. this is not the moment the mass market purchases a virtual reality headset, it is a signal there is interest from one of the largest companies in the world and their customers.<sup>20</sup>









# Irish Market Profile

## Irish Market Profile

The valuation of the Irish immersive technology sector, as assessed between June and September 2023, stands conservatively at over €92 million, based on reported turnovers from surveyed companies. This figure is likely understated, as not all active companies within the sector disclosed their financials; hence, the actual market size is expected to exceed €100 million.

The annual investment in immersive technologies by large organisations, as reported by survey respondents, is estimated between €8-16 million. This substantial financial commitment highlights the sector’s importance to major players within the Irish market.

The current valuation signifies heightened engagement and investment from a broad spectrum of stakeholders, encompassing small and medium-sized enterprises (SMEs) to large corporate entities in Ireland.

It is important to acknowledge that these figures present a restrained estimate of the market’s breadth, considering the non-participation or non-disclosure from several multi-nationals, founders, and domestic entities, including some industry front-runners.

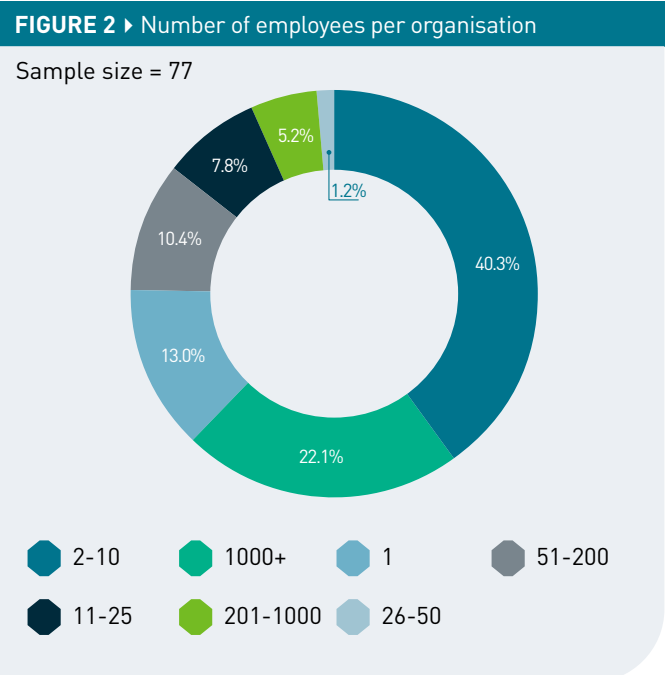
This emerging data portrays a clear trend of growth in the sector’s value since the previous year. It also accentuates the necessity for more regularised and comprehensive data collection processes within the ecosystem. Such measures will ensure the generation of dynamic, robust data that can facilitate the extraction of nuanced, actionable insights for strategic industry development.

### Employment

In 2022, a survey of the domestic immersive technology sector revealed a talent pool exceeding 750 professionals. In 2023, the distribution of employment demonstrates significant diversity in organisational size and structure, as can be seen in figure 2. The predominant proportion of the sector, constituting 40.3%, is small enterprises with employee counts ranging from 2 to 10. On the opposite spectrum, large-scale operations with a workforce exceeding 1000 make up 22.1%, indicating substantial investment from major industry players.

Additionally, the sector is marked by a notable percentage of sole proprietors, who constitute 13% of the total. Mid-sized organisations, with staff numbers between 51-200 and 11-25, account for 10.4% and 7.8% of the sector respectively, suggesting a stable presence of established, yet not large, entities. However, there is a distinct drop in the number of medium-sized businesses, with only 5.2% of companies employing between 201-1000 staff and a mere 1.3% hosting 26-50 employees. This indicates a potential growth opportunity or a market inefficiency that could be addressed by strategic investments or support programmes.

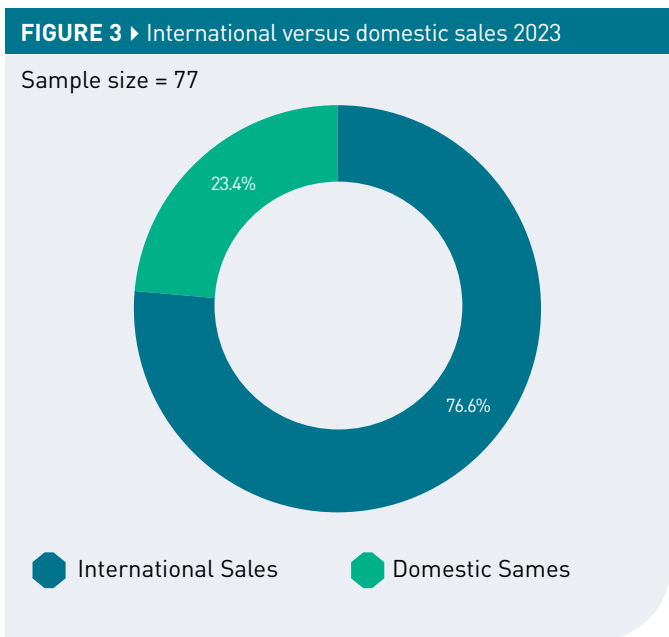
This employment structure reflects a dynamic industry ecosystem in Ireland, characterised by a blend of agility in small-scale operations and the robustness of large multinationals. This represents a unique set of opportunities and challenges for strategic development in the Irish immersive technology sector.



<sup>21</sup>Source: Irish Immersive Technology Industry Landscape 2022

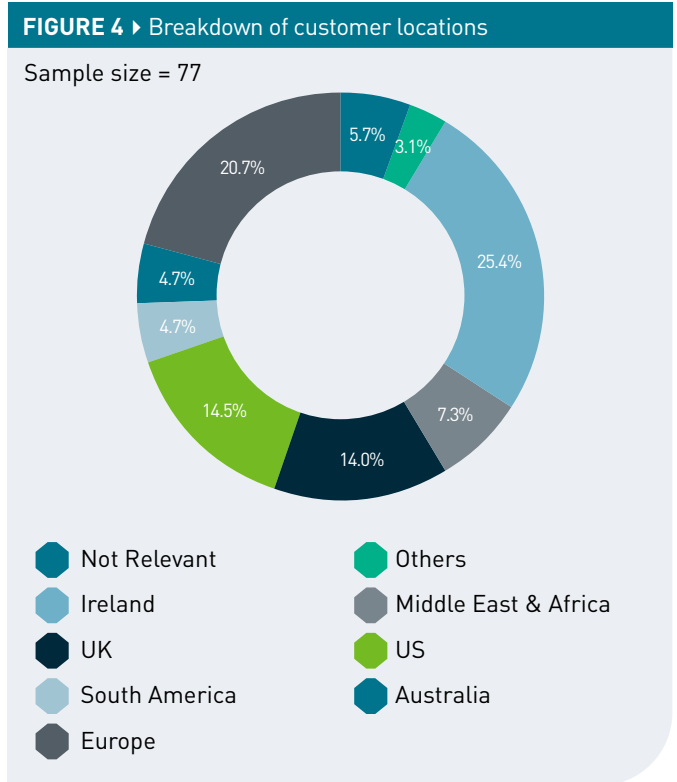
# Exports

The Irish immersive technology sector in 2023 demonstrates a substantial orientation towards international markets, with 76.6% of revenue originating from abroad, compared to 23.4% of revenue generated within domestic borders. This split signals an inclination towards exploiting global market opportunities paired with a recognition of the domestic market's value.



A further breakdown, as shown in Figure 4, illustrates the geographic diversity of the sector's customer base. Ireland, while a leading location for customers, constitutes 25.4% of the market, with other significant contributions from Europe (20.7%), the UK (14%), and the US (14.5%). The presence in the Middle-East and Africa (7.3%), alongside modest engagements in Australia and South America (4.7% each), reflects a sector that is globally active yet faces the challenge of diversifying its international footprint.

The 'born global' strategy of Irish companies is reflected in their international sales achievements. This strategic approach facilitates the circumvention of domestic market size constraints. However, it is crucial to recognise the inherent risks and complexities of a predominantly export-oriented model.





## What sectors are using Immersive Tech?

The application of immersive technologies cuts across a diverse range of sectors, indicating the broad scope of these tools within the commercial and public landscapes. The research delineates a comprehensive uptake in various fields, reflecting the versatility and transformative potential of immersive tech.

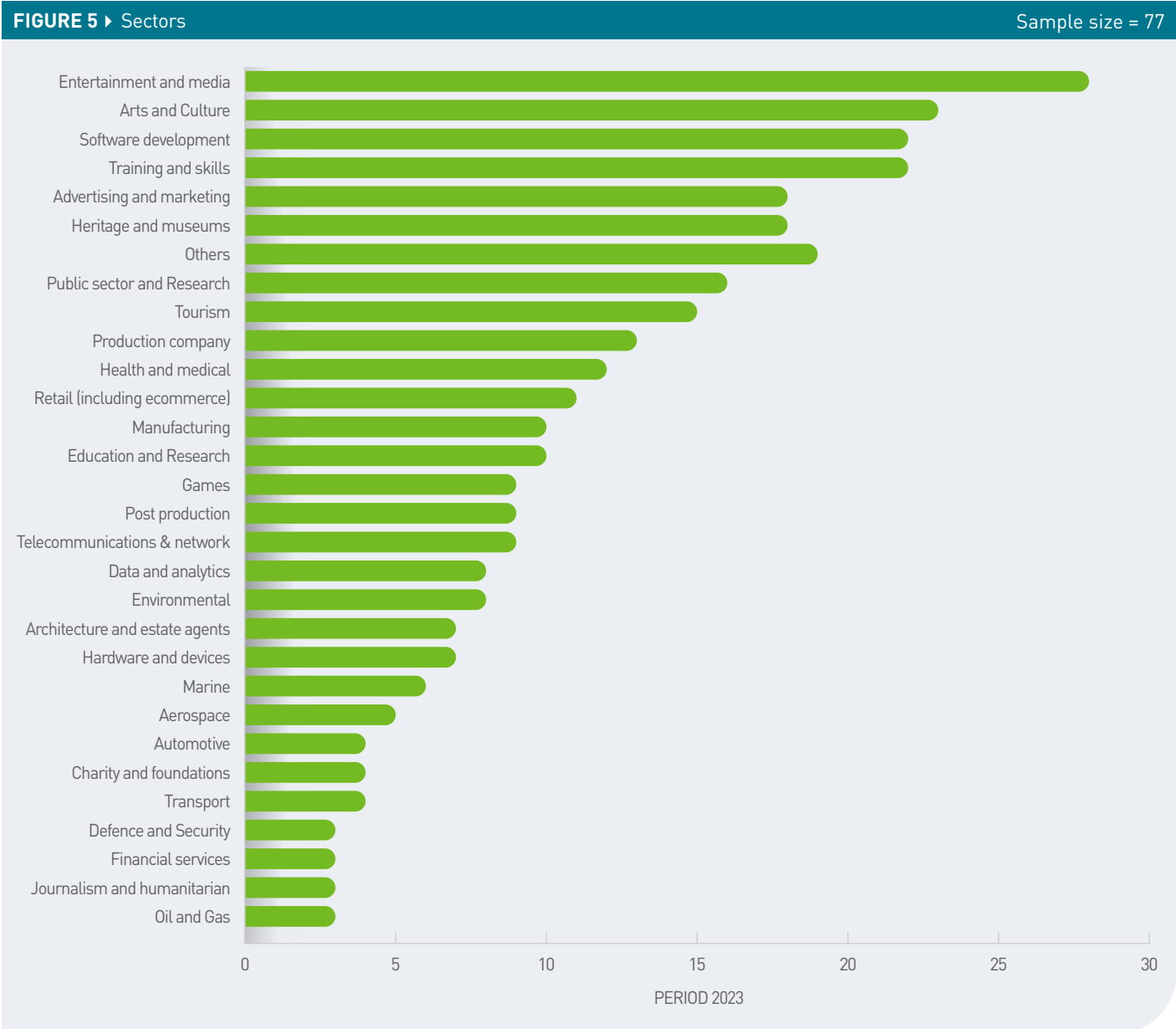
The forerunners in the adoption of these technologies, as identified by the survey, are:

1. Entertainment and media, leading with the highest engagement, demonstrating the sector's continued push for innovation and enhanced user experiences.
2. Arts and Culture, showing a significant inclination towards leveraging immersive tech for interactive and inspirational purposes.
3. Software development, where the integration of immersive technology from VR to AI is increasingly fundamental.
4. Training and skills, utilising immersive experiences for more effective skill acquisition and educational outcomes.
5. Advertising and marketing, where these technologies are being used to create impactful campaigns with deep customer engagement.
6. Heritage and museums, adopting new methods to bring history and culture to life and enrich visitor interactions.
7. The Public Sector, indicating a growing trend towards modernising public services and information dissemination.
8. Tourism, harnessing immersive tech to transform travel experiences and customer engagement.
9. Production companies, employing these technologies to revolutionise content creation and distribution.
10. Health and medical sectors, where immersive tech is becoming integral in medical training and health education.



This wide sectoral engagement points towards an expansive growth horizon for immersive technologies. Strategic development must therefore consider the unique demands and opportunities within each sector, with tailored approaches to maximise the potential of immersive tech. It is crucial to acknowledge sector-specific challenges, whilst ensuring that cross-sectoral learnings are leveraged to foster innovation and collaborative growth.





The research encapsulates a spectrum of entities actively engaged with immersive technologies, each contributing uniquely to the sector’s ecosystem. The composition of these entities is categorised into distinct cohorts, delineating the nature of their relationship with immersive technologies.

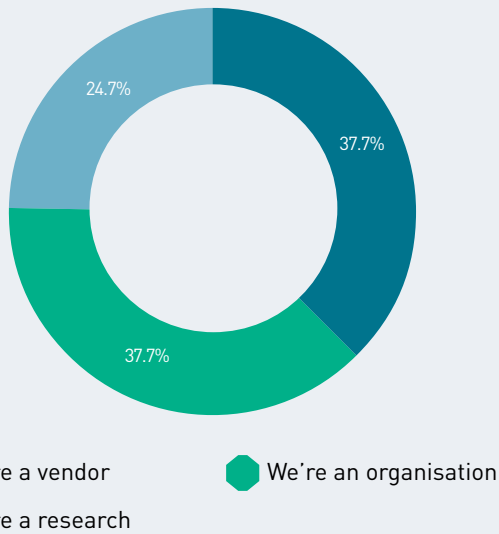
Vendors form a significant portion of the landscape, with 37.7% of the organisations surveyed identifying as providers whose core business revolves around immersive technologies. These vendors are pivotal in driving the industry’s innovation and market supply.

Organisations that are currently utilising or exploring the potential of immersive technologies represent another substantial cohort, accounting for 37.7% of participants. These entities, from various sectors, are integrating immersive technologies into their operations, signalling a trend towards digital transformation and the adoption of cutting-edge solutions.

Research organisations dedicated to the study and development of immersive technologies constitute 24.7% of the survey respondents. Their exploratory work is essential for the advancement of the field, underpinning the sector with scientific inquiry and innovation.

**FIGURE 6** ▶ Organisations relationship to immersive technology

Sample size = 77



1. Entertainment and media
2. Arts and Culture
3. Software development
4. Training and skills
5. Advertising and marketing
6. Heritage and museums,
7. Public sector and Research

## What are the top applications of immersive technology?

The landscape of Ireland’s immersive technology sector showcases a diverse and evolving application across multiple verticals. The research data underscores Ireland’s potential to become a leader in the global immersive technology sphere, given the broad spectrum of sectors actively engaging with these tools, and this sentiment has been a recurring theme in industry roundtable discussions.

### Current Application Domains

The latest survey reveals that the most prevalent use cases for immersive technology span several dynamic and culturally significant areas:

Comparing this data with the 2022 survey, listed below, there is a notable shift in focus areas. While ‘Education and Research’ and ‘Health and Medical’ were previously among the top areas, ‘Entertainment and Media’ has seen a significant rise in application. Additionally, ‘Manufacturing’, previously a top area, is now less prominent, suggesting a pivot in sectoral priorities and perhaps a reflection of market demands and technological advancements.

1. Education and research
2. Software development
3. Training and skills
4. Advertising and marketing
5. Entertainment and media
6. Health and medical
7. Manufacturing

The shift in the application of immersive technology underscores the need for adaptive strategies that can respond to rapid changes in sectoral technology adoption. It is imperative to continually assess market trends, invest in sectors showing growth potential, and provide support for those areas with emerging potential. Strategic efforts should aim to capitalise on the strengths of the current leaders while fostering growth in nascent areas of application.

## What technologies are being prioritised?

In the evolving landscape of immersive technologies, the 2023 survey delineates clear priorities within the sector, spotlighting the technologies that are garnering significant attention and investment.

The survey highlighted the key technologies being prioritised:

1. **Virtual Reality (VR):** Standing at the forefront, VR is identified as the leading technology with 14.1% prioritisation, reflecting its central role in creating fully immersive digital environments.
2. **Augmented Reality (AR):** With a focus of 12.4%, AR technology, which overlays digital information onto the physical world, continues to be a significant area of interest for its diverse applications across industries.
3. **Artificial Intelligence (AI):** Garnering 11.1% of the prioritisation, AI's transformative impact is recognized for its ability to enable intelligent, responsive experiences within immersive environments.
4. **Extended Reality (XR):** Also at 11.1%, XR, an umbrella term encompassing VR, AR, and MR, signifies the industry's move towards a unified, cross-platform immersive experience.
5. **Mixed Reality (MR):** With 8.6% prioritisation, MR is highlighted likely for its hybrid approach, merging real and virtual worlds to produce new environments where physical and digital objects coexist and interact in real-time.

This technological prioritisation signals a strategic shift towards integrated experiences that transcend traditional boundaries. The focus on VR and AR indicates a maturing market with ready applications, while the emphasis on AI and XR suggests a drive towards innovation and enhanced interactivity.

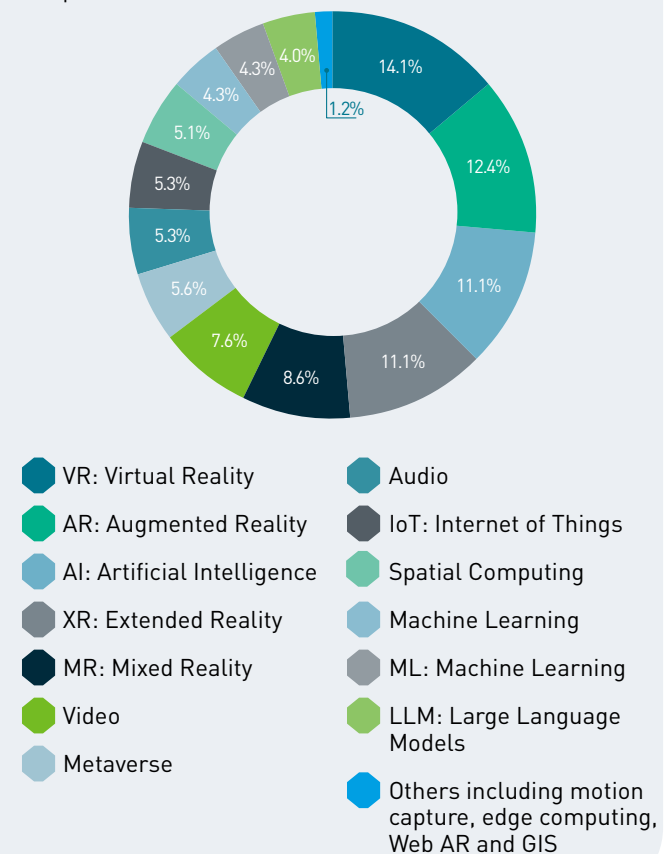
For industry stakeholders, understanding these priorities is essential for aligning business strategies with market trends. Investment in these key technologies is not only about adopting new tools but also about reshaping organisational processes and consumer interactions.

Organisations should consider developing capabilities in these priority technologies to stay competitive and meet the evolving demands of the immersive tech landscape.

Collaboration with technology providers and cross-sector partnerships can facilitate access to these technologies and their integration into existing products and services.

**FIGURE 7** ▶ Prioritised immersive technologies

Sample size = 77



## Where Immersive Tech is Driving Value

The survey provides insight into the multifaceted value that immersive technologies bring to organisations, as depicted in Figure 9. These technologies are carving out a significant niche in several key areas:

### Primary Value Drivers

**Product Development:** Immersive technology is most prominently valued for its role in product innovation. With 28.2% emphasis, it enables the creation of new products, expedites prototyping processes, and enhances the reputation of companies as leading-edge innovators.

**Research and Development:** Representing 24.6%, R&D is being revolutionised by immersive tech through innovation-led activities, both in academic and applied research, reflecting the sector’s commitment to continuous advancement.

**Revenue Growth:** With a focus of 14.1%, the ability of immersive technologies to open new market opportunities and expand target markets is recognised, indicating its impact on top-line growth.

### Investment Trajectory

The data further indicates a strong investment intent, with 74% of organisations surveyed planning to increase their investment in immersive technologies in the coming year. The scale of these investments ranges from tens of thousands to millions of euros, underscoring the strategic importance of these technologies in future business models.

The survey’s findings suggest a critical need for strategic initiatives that support the integration of immersive technologies in product development, R&D, and market expansion initiatives. Organisations are recognising not only the immediate impact of immersive technologies on operational processes but also its long-term benefits in market differentiation and revenue generation.

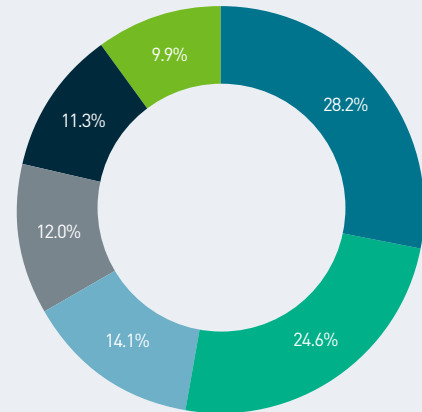
Stakeholders should consider prioritising funding and resources towards areas with the highest perceived value, such as product development and R&D, to maximise ROI.

Building capabilities in immersive tech can be seen as a strategic move to capitalise on new revenue streams and position the organisation as a market leader.

A forward-looking investment strategy in immersive technologies can provide a competitive edge and foster sustainable business growth.

**FIGURE 8** ▶ How organisations are using immersive technology

Sample size = 77



- Product i.e. the ability to develop new products/faster prototyping, and/or to increase the visibility of the company as an innovator
- Research e.g. Innovation led R&D, academic or applied research.
- Revenue e.g. the ability to expand the markets the company targets
- Culture e.g. changing the culture of the business or organisation
- Process e.g. improvements in organisation and efficiency
- Other





Key Findings

## Key Findings

This section distils the principal insights derived from the research conducted between June and September 2023. These findings stem from an extensive survey and a series of roundtable discussions held in the second half of the year.

Our investigation has brought to light several significant growth impediments that companies may be encountering. These barriers are critical in understanding why some organisations are not scaling as anticipated.



## Key Finding #1 Limiting Potential

The research highlights a growing trend in companies facing barriers, stifling growth and scaling opportunities. These obstacles are significant because they not only inhibit individual company growth but also impede the overall sector's scalability and success.

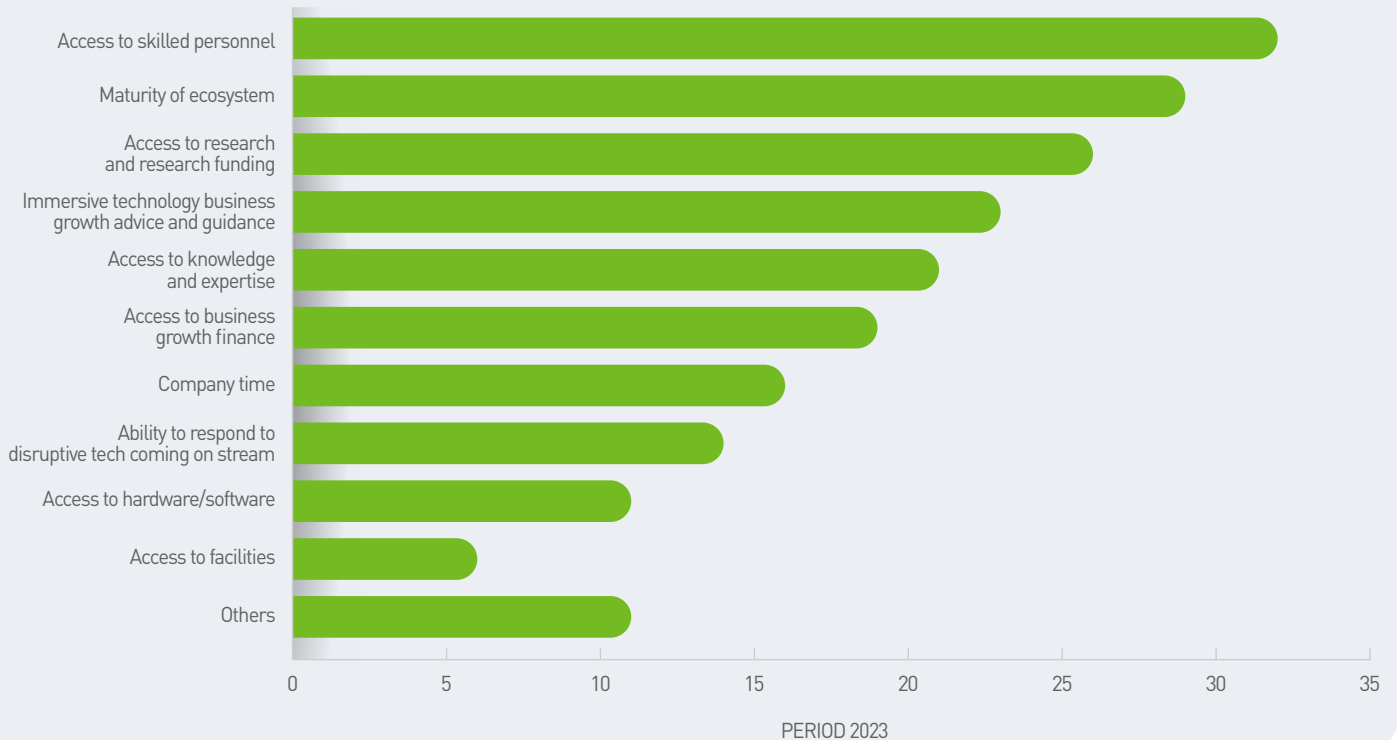
### Identified Company Growth Obstacles

The survey identified critical barriers including:

1. **Skilled Personnel:** The most prominent challenge is the access to skilled personnel, reflecting an industry struggling to find the right talent to drive innovation forward.
2. **Ecosystem Maturity:** The ecosystem's maturity, or lack thereof, suggests a need for more robust infrastructure and community to support immersive tech growth.
3. **Research and Funding:** Limited access to research support and funding points to a disconnect between innovative ideas and the resources required to realise them.
4. **Business Growth Support:** The need for business growth advice and guidance highlights the complexities of scaling in a rapidly evolving tech landscape.
5. **Knowledge and Expertise:** A gap in knowledge and expertise underscores the importance of continuous learning and adaptation.
6. **Finance and Time Constraints:** Limited access to finance and company time constraints further compound these challenges, creating a bottleneck for development and deployment.
7. **Hardware/Software and Facilities:** Adequate access to necessary hardware, software, and facilities remains a hurdle, impacting product development and service delivery.

**FIGURE 9** ▶ Highlighted barriers

Sample size = 77



Comparing these findings to the top barriers of 2022 reveals a consistent theme of skills shortage, funding challenges, and the need for infrastructure improvements:<sup>22</sup>

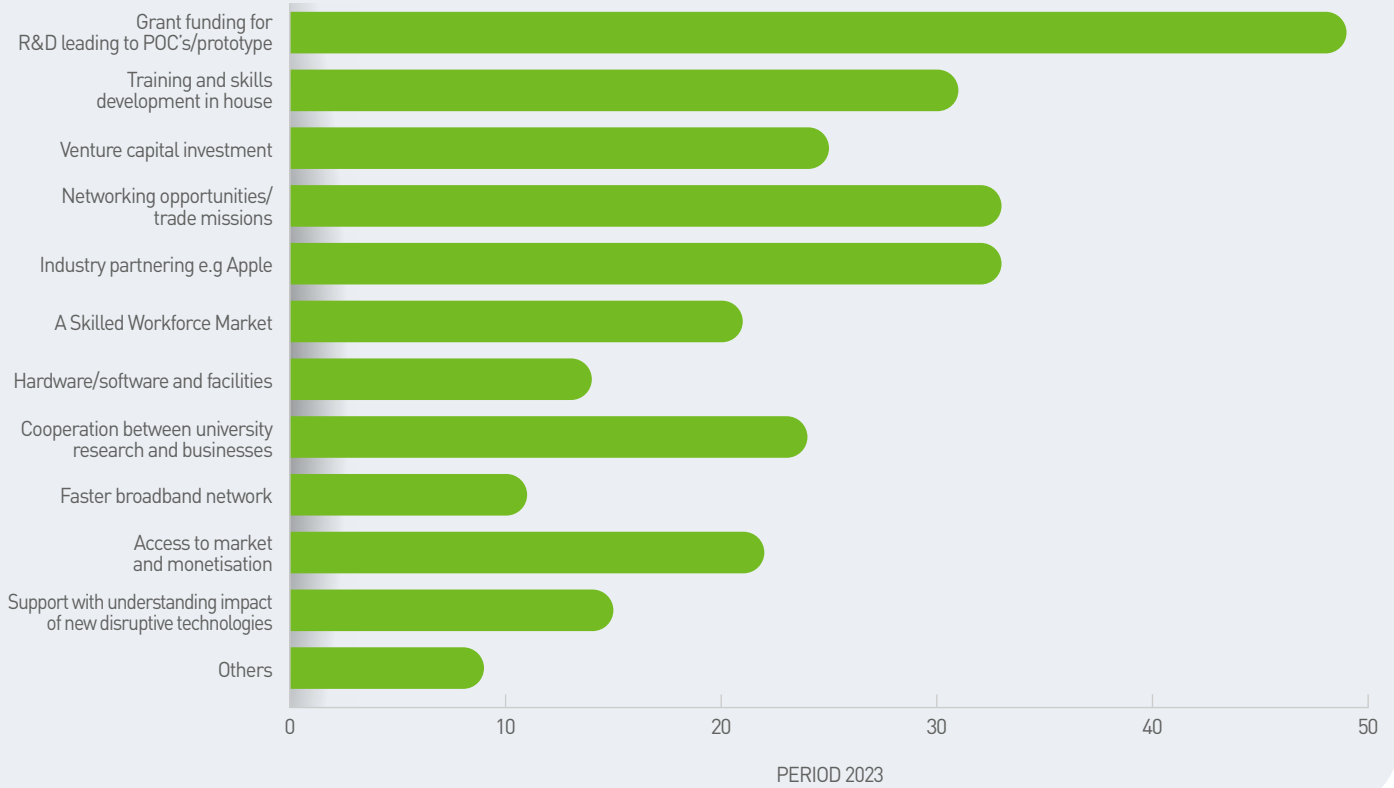
1. Lack of skilled personnel
2. Lack of funding
3. Lack of knowledge
4. Lack of time
5. Lack of an ecosystem
6. Lack of access to hardware/software
7. Lack of relevant events
8. Lack of facilities

To surmount these obstacles, organisations have expressed a clear need for:

- ▶ **R&D Funding:** Simplified funding processes for research and development leading to proof of concept and prototyping are essential.
- ▶ **Skills Development:** In-house training and skills development initiatives are critical to cultivate the necessary talent.
- ▶ **Capital and Networking:** Venture capital investment and networking opportunities are pivotal for financial support and industry connections.
- ▶ **Industry Partnerships:** Collaborations with leading industry players can provide a much-needed boost to innovation and market reach.
- ▶ **Resource Accessibility:** Access to modern hardware/software and improved facilities can significantly enhance product development and innovation capabilities.

**FIGURE 10** ▶ Supports needed to develop immersive technology activity in the future

Sample size = 77



## Access to Finance and Funding

The roundtable discussions shed light on the critical need for financial support within the immersive technology sector. Participants underscored the necessity for simplified funding processes and targeted grants to foster sector growth. The discourse highlighted the following essential needs:

- ▶ Simplification of funding processes and the introduction of targeted grants.
- ▶ Enhancement of government and private investment in the sector.
- ▶ Establishment of dedicated teams and resources within government bodies to support immersive technology.
- ▶ Provision of grant aids and tax incentives specifically designed for companies in this space.
- ▶ Allocation of funds for acquiring equipment, facilitating training, and market introduction of products.

However, bureaucratic obstacles and a lack of startup funding at various stages of company growth cycles in Ireland were flagged as significant challenges impeding progress.

Opportunities for enhancing financial support:

- ▶ Streamlining funding applications to make them more accessible and responsive.
- ▶ Introducing sector-specific funding programmes aimed at long-term growth, innovation, and sustainability.
- ▶ Developing public funding support mechanisms that align with the growth needs of immersive technology companies.
- ▶ Simplifying existing funding processes to enable quicker grants and investment responses.
- ▶ Improving the visibility of business growth, R&D, and innovation funding opportunities.





## Research and Development

Insights from the industry roundtables identified university-industry collaboration as pivotal for innovation and skills development. However, a competitive rather than collaborative ecosystem was noted, along with a misalignment between academic curricula and industry needs.

Strategies to foster research and development:

- ▶ Initiating a consultation process for greater industry input into university curricula and research programmes.
- ▶ Developing a national strategy for skills development and training to address current skills gaps.
- ▶ Providing targeted research funding for universities to pioneer early-stage research and innovation programmes in partnership with the industry.
- ▶ Creating joint development programmes and research initiatives to bolster long-term collaboration.

## Inclusion and Diversity

Diversity was recognised as a critical element for long-term success in the innovation sector. Existing challenges include biases in investment, support, and hiring practices, with a noted lack of emphasis on authentic diversity within the workforce.

Initiatives to promote inclusivity:

- ▶ Implementing training programmes in Equality, Diversity, and Inclusion (EDI) strategy development for the sector.
- ▶ Setting diversity criteria and guidelines to influence funding decisions and hiring practices.
- ▶ Encouraging business incubation and acceleration programmes specifically aimed at female founders and those from underrepresented groups, including those with hidden disabilities.

Addressing these pivotal areas - finance, research, and inclusivity - is essential for creating a robust and dynamic environment where immersive technology companies can thrive. These initiatives represent not only the immediate actions needed but also the long-term strategic investment in the sector's sustainable growth and innovation potential.

## Key Finding #2 Skills Challenge

The immersive technology sector is grappling with significant talent acquisition and skills development challenges that threaten the stability and growth potential of businesses within the industry. The research identifies a troubling trend where companies are struggling to access skilled personnel and the specialised knowledge required to innovate and remain competitive.

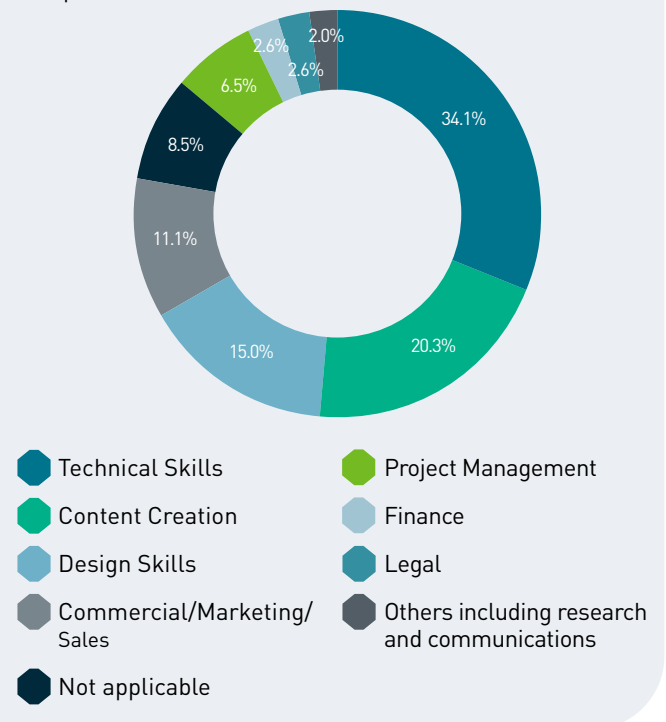
### Extent of the Skills Shortage

The survey indicates that 41.6% of respondents face hurdles in recruiting individuals with the necessary technical skills. Another 33.7% report that finding expertise in the field poses a barrier to their operations. This scarcity is most acutely felt in the areas of:

- ▶ Technical proficiency, vital for the development and maintenance of immersive technologies.
- ▶ Content creation, essential for the production of compelling and engaging immersive experiences.
- ▶ Design skills, which contribute to the usability and aesthetic appeal of immersive applications.
- ▶ Commercial acumen, including marketing and sales, crucial for market expansion and revenue growth.

**FIGURE 11** ▶ Top requested skills from employers

Sample size = 77



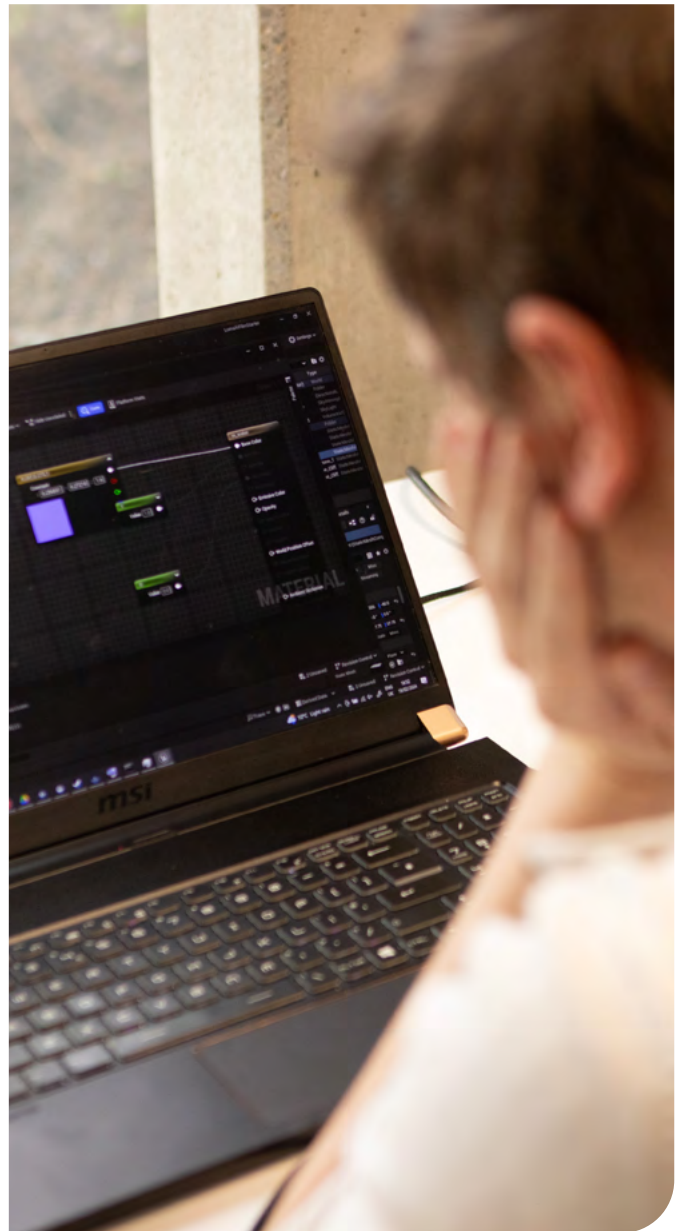
### Industry-Wide Call for Action

The roundtable discussions echoed the survey findings, with a broad consensus on the need for national occupational standards and specialised training programmes. There is a clear call for better alignment between industry, government, and academia to address the skills gap effectively.

## Strategies for Skills and Workforce Development

Opportunities to mitigate these challenges include:

- ▶ Implementing mentorship programmes and early education in STEM to build a foundation for future talent.
- ▶ Launching awareness campaigns highlighting the career opportunities within the VR/AR/MR sectors for students and parents.
- ▶ Introducing specialised courses and modules in XR design and development to bolster both immediate and long-term industry skills requirements.
- ▶ Expanding upskilling and training offerings in immersive technologies to current professionals, addressing immediate skill shortages.
- ▶ Developing national occupational standards in collaboration with industry leaders to ensure workforce readiness.
- ▶ Establishing tailor-made training programmes within educational institutions, closely aligned with current and future industry demands.



Closing the existing skills gap is imperative for the sustained growth and stability of the immersive technology sector. It requires a concerted effort to develop fit-for-purpose educational programmes and a commitment to fostering a skilled workforce that can meet the evolving demands of this innovative field.

## Key Finding #3 Disconnected Ecosystem

The immersive technology sector within the domestic market is navigating through its nascent stages towards maturity. There is a clear recognition that while there has been progress, there is considerably more to be accomplished. A strategic call to action has been made for the establishment of a national body, or support for an existing organisation like Eirmersive, dedicated to connecting and nurturing the ecosystem and its constituent companies.

### Need for Collaboration and Knowledge Exchange

Key discussions have underscored the necessity of building awareness and facilitating knowledge sharing to educate the domestic market about the potential of immersive technologies. Potential initiatives include:

- ▶ Fostering connections and collaboration between stakeholders in industry, government, and research institutions to create a cohesive community.
- ▶ Developing case studies to demonstrate the tangible impact and benefits of employing immersive technologies within various sectors.
- ▶ Organising face-to-face networking events and knowledge-building workshops to encourage information exchange and sectoral education.
- ▶ Conducting comprehensive market mapping to identify growth trajectories, sector needs, barriers, and opportunities, integrating these insights into national strategic planning.
- ▶ Creating platforms for knowledge exchange to address common challenges, such as the shortage of skilled personnel.
- ▶ Enhancing the ecosystem's interconnectivity through forums and online resources for shared learning and resource distribution.

## Government and Institutional Frameworks for Support

The roundtable discussions highlighted the significance of international representation for domestic companies and suggested campaigns to integrate immersive technologies into public services, such as libraries. However, identified challenges include:

- ▶ The absence of a cohesive national strategy and dedicated government task forces specifically for immersive technologies.
- ▶ The need for a strategic alignment that brings together cross-functional stakeholders and leadership to drive the sector forward.

## Public Funding Agencies and Policy Alignment

Educating public funding agencies about the sector's unique barriers and opportunities is crucial for the informed design of support programmes. There is an urgent need for:

- ▶ Interventions that are tailored to the needs of immersive technology companies.
- ▶ Greater alignment of the sector's activities with other government policy initiatives such as the 'AI Here for Good' framework (Department of Enterprise, Trade and Employment, DETE), the Digital Arts Policy (Arts Council) and the Digital Creative Industries Roadmap (Creative Ireland).
- ▶ A holistic approach that integrates various policy activities to create a supportive environment for the growth of immersive technologies.

The evidence points to a need for a concerted effort to align the sector's growth with national strategies and to establish a dedicated body that can provide leadership, connection, and support. By addressing these needs, the immersive technology sector can evolve into a mature market, contributing significantly to the national economy and innovation landscape.

## Key Finding #4 Awareness Challenge

Feedback from roundtable sessions has consistently highlighted a significant awareness challenge within the immersive technology industry in Ireland. There is a pervasive lack of understanding regarding the disruptive and enabling capabilities of immersive tech currently available in the nation, as well as an underappreciation of the burgeoning number of local companies specialising in this field.

### Promoting Sector Visibility

To combat this, increasing the visibility of the immersive tech sector and its domestic offerings is essential. Opportunities for enhancing this visibility include:

- ▶ Developing and disseminating case studies that showcase Irish companies' innovative products, services, and experiences to illuminate the impact and value of immersive technology.
- ▶ Conducting promotional campaigns that not only draw in customers but also educate government entities on the benefits and potential of immersive tech.
- ▶ Emphasising the availability of local partners and services as opposed to those based in the UK, which was specifically noted as an area for improvement.

## Facilitating Access and Encouraging Acceptance

The roundtable discussions underscored the importance of:

- ▶ Supporting knowledge sharing, industry inductions, and creating accessible training opportunities in immersive technology for organisations.
- ▶ Improving access to technology and hardware, noting that while many resources exist within research centres or universities, they are not universally accessible.
- ▶ Promoting the business value of VR/AR/MR technologies to cultivate a broader potential customer base and encourage private sector buy-in.
- ▶ Hosting events and networking opportunities that highlight market demand and technological advancements.



## Intellectual Property (IP) Challenges and Opportunities

There is significant activity in the IP domain within Irish immersive technology companies. However, gaps in IP awareness and literacy were identified, including confusion around IP ownership and a lack of understanding of European patent reforms. To address these challenges, the following measures were proposed:

- ▶ Reinforcing the importance of trademarks and IP rights within the sector.
- ▶ Bridging the knowledge gap through targeted educational initiatives to enhance IP understanding.
- ▶ Recognising the impact of intellectual property management on business growth and innovation.
- ▶ Proposing the creation of a data and market intelligence service tailored to the creative industries, focusing on IP.
- ▶ Conducting research into market rates and guidelines to support the creative industry's IP management.

To overcome the awareness challenge, a multifaceted approach is needed—one that not only elevates the sector's profile but also instils a deep understanding of the strategic importance of immersive technologies and intellectual property management. By addressing these areas, Ireland's immersive technology industry can secure its position as a leader in innovation and a hub for creative talent.



# Strategic Recommendations

## Strategic Recommendations

The comprehensive research conducted from June to September 2023 has culminated in the identification of strategic priority areas. These priorities aim to catalyse a trajectory of sustainable growth for Ireland’s immersive technology sector.

### Continuation and Evolution of 2022 Initiatives

Building upon the foundations laid in the Irish Immersive Technology Industry Landscape 2022, the following initiatives have been reinforced:<sup>23</sup>

- ▶ The development of an Immersive Technology Strategic Roadmap for Growth to chart the course for the sector’s development.
- ▶ Amplifying the awareness of the transformative power of immersive technology within Ireland to stimulate engagement and adoption.
- ▶ Allocating targeted funding to drive innovation and growth within the sector.
- ▶ Providing robust business and development support to foster sector advancement.
- ▶ Establishing a dedicated fund for access to immersive tech equipment and hardware, facilitating demonstrations across various industries.
- ▶ Empowering regional entities to deliver tailored support, reflecting the unique needs of local ecosystems.
- ▶ Encouraging cross-sector collaboration to harness synergies and foster innovation.
- ▶ Promoting the Irish immersive technologies sector on an international stage, spotlighting its potential and capabilities.
- ▶ Initiating European-funded R&D programmes that encourage collaboration between universities and industry.

## Strategic Focus for 2024

The priority areas for 2024, if effectively addressed, are poised to unleash the innovation presently constrained by existing barriers. The recommendations aim to:

- ▶ Convene key stakeholders to foster a unified and robust ecosystem that supports immersive technology ventures.
- ▶ Position Ireland as a leading figure in the global Immersive Technology sector, leveraging its unique strengths and innovative spirit.

## Unlocking Ireland’s Global Leadership Potential

By addressing these priorities, Ireland can not only overcome current limitations but also pave the way for a future where it holds a leadership position in the global Immersive Technology landscape. The envisioned future is one where innovation is not stifled but rather encouraged, where stakeholders are not dispersed but connected, and where the ecosystem is not fragmented but strong and sustainable.



## Recommendation #1: Cross-Sector Input

In light of the extensive research and evolving needs of the immersive technology sector, it is recommended that an independent, cross-sector Advisory Group, supported by Cultural & Creative Industries Skillnet and a relevant industry partner, takes on a pivotal role in steering the sector towards a more collaborative and integrated future.

This Advisory Group should act as the convening force, drawing together a diverse array of industry players, representative bodies, and stakeholders to actively contribute to the Digital Creative Industries Roadmap and upcoming national campaigns. Future collaboration will be facilitated by government agencies, including but not limited to the Department of Enterprise, Trade and Employment, ensuring that the immersive technology sector's unique perspectives and needs are adequately represented and addressed.



## Key Actions for The Advisory Group

- ▶ Collaborate with cross-industry groups and representative bodies to provide comprehensive input into the Digital Creative Industries Roadmap.
- ▶ Engage with national support agencies to address the broader challenges identified within the sector, as detailed in this report.
- ▶ Foster partnerships that cross traditional sector boundaries to ensure a holistic approach to the sector's development and integration into the wider digital economy.
- ▶ Implement a strategy that ensures the immersive technology sector's voice is heard in policy development, particularly in areas of skills, innovation, and R&D.
- ▶ Establish a framework for ongoing dialogue and action that supports the sector's sustainable growth and aligns with Ireland's national digital strategy.



## Recommendation #2: Immersive Skills Advisory Group

In response to the critical skills challenge facing the immersive technology sector, a national immersive skills Advisory Group should be established by Cultural & Creative Industries Skillnet, with support from a relevant industry partner by the end of 2024, with cross-functional and cross-sector stakeholders represented. This group's objective will be to develop a comprehensive set of recommendations for skills development within the immersive technology sector.

### Action Plan for the Advisory Group

- ▶ **Formation:** The Advisory Group should be composed of a diverse range of stakeholders, ensuring cross-functional and cross-sector representation to capture the full spectrum of industry needs.
- ▶ **Mandate:** The Advisory Group will be charged with the creation of a comprehensive set of recommendations for skills development, addressing current deficiencies and anticipating future skill requirements.
- ▶ **Timeline:** This Advisory Group should be put into action by the end of 2024, with a clear mandate to produce a comprehensive set of skills recommendations within a 12-month period to be proposed to the skills subgroup established in response to the Digital Creative Industries Roadmap for consideration, as well as to other relevant stakeholder organisations.
- ▶ **Reporting:** The Advisory Group will operate with transparency, providing regular updates and insights to the skills subgroup established in response to the Digital Creative Industries Roadmap.
- ▶ **Outcomes:** The aim of the Advisory Group is to develop a comprehensive set of skills recommendations that will inform policy, influence educational curricula, and guide industry practices towards closing the skills gap.

## Strategic Importance

The formation of this Advisory Group is of strategic importance, not only for addressing immediate concerns but also for establishing a foundation for continuous learning and development within the sector. By aligning educational programmes with industry demands, Ireland can secure a competitive edge in the global market for immersive technologies.



## Recommendation #3: Cross-Sector Working Groups

A disconnected yet highly motivated immersive technology sector further fragments opportunities to drive research, IP development, company growth and innovation.

Dedicated working groups that prioritise the gaps and barriers identified in this report will create an opportunity to bring together the right knowledge and expertise to better understand and address these challenges in detail and scope future solutions.

### Strategic Formation of Working Groups

Recommendation #3 calls for the creation of IITSG working groups focused on priority areas that have emerged from the research. These groups will play a pivotal role in dismantling the barriers that currently hinder innovation and growth within the sector.



## Role and Support of the Working Groups

The working groups will contribute vital insights to the development of the IITSG. Their activities will encompass:

- ▶ **Industry & Academia Working Group:** This group will focus on integrating industry needs into educational curricula, ensuring that secondary and higher education institutions (HEIs) provide training that is relevant and future-focused. They will also promote research and innovation collaboration between universities and SMEs, aiming to expand skill sets and facilitate access to comprehensive training programmes.
- ▶ **Future of Skills Working Group:** Addressing the skilled workforce shortage, this group will advocate for subsidised training opportunities that extend beyond the current offerings. Investment in future skills development will be a key agenda item, with a focus on equipping the workforce with future-oriented competencies.
- ▶ **Funding & Finance Working Group:** Engaging in dialogue with government bodies, this group will seek to align support mechanisms and grant aid with the specific needs of the immersive technology industry. They will also investigate targeted regional support and review grant structures to better serve the sector's creative and innovative projects.
- ▶ **Diversity & Inclusion Working Group:** This group will undertake research to assess the current state of diversity within the sector, pinpointing barriers to equitable participation. The aim will be to establish standards for D&I, share best practices, and develop messaging that underscores the value of diverse and inclusive approaches in the immersive tech industry.

By addressing these key areas through focused working groups, the sector can move towards a more integrated and collaborative future. The groups' efforts will not only target immediate issues but also lay the groundwork for long-term strategic alignment and ecosystem health.

## Recommendation #4: Building an Aware and Engaged Ecosystem from the Ground Up

For Ireland's immersive technology sector to flourish, there must be a concerted effort to foster an ecosystem that is both aware and actively engaged. Organisations such as Eirmersive, are poised to spearhead this initiative, embarking on a series of cross-sector creative and industry campaigns over the coming year. Working in concert with wider support bodies and organisations, fulfilling multiple pivotal roles:

- ▶ **Educational Leadership:** To disseminate knowledge within the Irish innovation and research community about the significance and applications of immersive technologies.
- ▶ **Community Building:** To knit the industry closer together through knowledge-sharing events, networking opportunities, and facilitating meaningful connections.
- ▶ **Resource Navigation:** To guide industry participants to appropriate funding, support mechanisms, and resources that can accelerate growth and innovation.
- ▶ **Adoption and Awareness:** To enhance the understanding and application of immersive technology across various sectors, driving broader adoption and recognition of its value.
- ▶ **Showcasing Success:** To create and circulate case studies that clearly demonstrate the transformative impact and potential of immersive technologies.
- ▶ **Global Presence:** To elevate Ireland's profile on the international stage through active participation in trade shows, conferences, and other global events.

## Strategic Actions for the Benefit of the Ecosystem

- ▶ **Outreach and Advocacy:** To engage in proactive outreach that educates and advocates for the immersive technology sector, addressing key growth inhibitors and fostering sector cohesion.
- ▶ **Sustainability Goals:** To align the network's formation with industry support, ensuring its long-term viability and effectiveness.
- ▶ **Knowledge Exchange Platforms:** To establish forums and platforms that encourage the sharing of insights and experiences, thereby contributing to the collective intelligence of the sector.

The establishment of Immersive Technology focused initiatives will act as a catalyst for change, connecting disparate elements within the ecosystem, breaking down barriers, incentivising collaboration, and propelling meaningful, sustainable growth. This will not only serve immediate needs but will also lay down the groundwork for future innovation and sectoral prosperity.



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5	AR/VR B2C market revenue worldwide from 2017 to 2027 (in billion U.S. dollars)	Statista, 2023	8
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22	Irish Immersive Technology Industry Landscape 2022	Skillnet Ireland, 2022	21
23	Irish Immersive Technology Industry Landscape 2022	Skillnet Ireland, 2022	30



## Appendix A | Glossary of Technology/Terms

Term	Description
<b>AR: Augmented Reality</b>	Augmented Reality enhances your current perception of the world by overlaying digital content, such as images or information, onto the real world through devices like smartphones or special glasses.
<b>AI: Artificial Intelligence</b>	Artificial Intelligence is the simulation of human intelligence in machines. These smart systems are designed to think like humans and perform tasks such as recognizing speech, making decisions, and translating languages.
<b>Audio</b>	Audio refers to the sound that is electronically transmitted or recorded. It is a crucial element of immersive experiences, providing a sense of presence and realism.
<b>IoT: Internet of Things</b>	The Internet of Things connects everyday devices to the internet, from your refrigerator to your car, enabling them to send and receive data. This networked connection makes devices smarter and more responsive to your needs.
<b>LLM: Large Language Models</b>	Large Language Models are advanced AI that process and generate human-like text. They understand language nuances and can answer questions, write content, and even create poetry.
<b>Machine Learning</b>	Machine Learning is a branch of AI that allows computers to learn from data. Instead of being programmed with specific instructions, they use data to improve their understanding over time.
<b>Metaverse</b>	The Metaverse is a collective virtual space where people can interact with each other and with computer-generated environments and objects. It's a world where the digital and physical converge, with technologies to support.
<b>MR: Mixed Reality</b>	Mixed Reality combines the best of both virtual and real worlds. In MR, digital and physical objects co-exist and interact with one another in real-time, offering a hybrid reality.
<b>Spatial Computing</b>	Spatial Computing enables computers to interact with objects and environments in 3D space. It allows devices to understand and navigate the world around them, making technology more intuitive and natural to use.
<b>Video</b>	Video technology captures, records, and displays moving images. In immersive technology, video is often used to transport viewers to different places and times, creating a sense of being 'elsewhere'.
<b>VR: Virtual Reality</b>	Virtual Reality immerses you completely in a computer-generated world. With a VR headset, you can explore virtual environments as if you were actually there.
<b>XR: Extended Reality</b>	Extended Reality is a term that includes all real-and-virtual combined environments (AR, VR, MR). It represents the full spectrum of immersive technologies that merge the physical and virtual worlds

## Appendix B | List of Organisations Consulted

Organisation		
AIT	Local Enterprise Office Waterford	Technological University of the Shannon
Algorithm	Logitech	Trinity College Dublin
Arup	Magpie 6 Media	Trudo
Ascend Learning	Mastercard	Technical University Dublin (TU Dublin)
Avanade	meetingRoom	TUS
Axonista	Meta	TUS Athlone
Bouldermedia	Moshi Moshi Media	University College Dublin (UCD)
Cleverbooks	Munster Technological University	UCD Innovation Academy
Colonii	Nimbus Research Centre, MTU	Údarás na Gaeltachta
Culture Works	Noho Ltd	Unity
Edge Behaviour	University of Galway/NUIG	University of Galway
The Innovation Show	Nuwa Ltd	University Of Limerick
Emagine	Orb Media	Virtual Reality Gaming Ltd.
Enterprise Ireland	Plop	Volograms
ESB	Property Districts	VRAI
Fingal County Council	Quill & Quaver Associates	Western Development Commission (WDC)
IADT	S3 Connected Health	Waterford and Wexford Education and Training Board (WWETB)
Imvizar	SchooVR	
Innovision Media Limited	SETU Walton Institute	
Intel	Sim Virtua	
Irish Manufacturing Research	StoryToys	
Learnovate	SYSforce.ai	





Growth  
90%

28°C

Temperature

49%

Humidity

rate

14:34 28°

# SMART FARM SYSTEM

- Location pin icon
- Home icon
- Gear icon
- DNA icon
- Weather icon (cloud with sun)
- Thermometer icon
- PH label
- Water drop icon

- Bar chart
- Line graph
- Circular gauge
- Water drop icon





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Cultural & Creative Industries Skillnet is co-funded by Skillnet Ireland and network companies. Skillnet Ireland is funded from the National Training Fund and the European Union through the Department of Further and Higher Education, Research, Innovation and Science.



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