

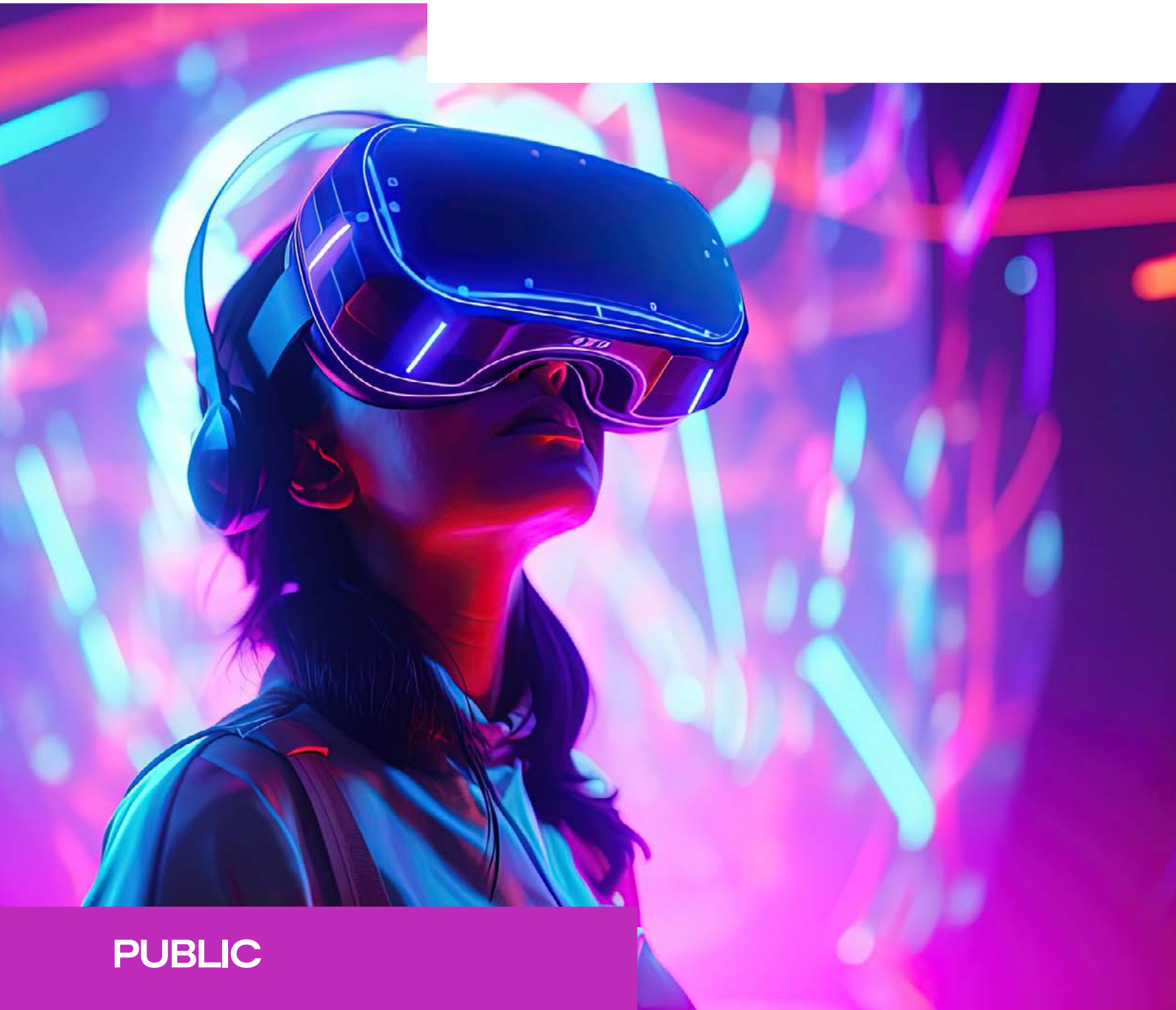


Innovate
UK

Innovate UK Global Expert Mission Report

Immersive Technology in Canada

January 2024



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01. Executive Summary

The rapid pace of immersive hardware and software development alongside innovative creative practices adopting immersive technologies is rapidly increasing awareness and implementation in numerous verticals. In the years to come, immersive technology will impact every aspect of our lives.

This mission acted as a platform to inform and launch bilateral agreements and funding opportunities to strengthen the UK and Canadian immersive technology markets. Rather than seeing Canada as a competitor, UK stakeholders are keen to collaborate to leverage each counterpart as a soft landing to bigger markets such as the US and Europe.

Canada and the UK share many challenges as well as frameworks for innovation and funding, as well as cultural similarities such as language which makes Canada an ideal market for UK companies to explore. Additionally, both countries recognise the need for increased funding to support start-ups and overcome barriers to entry, such as cross-sector collaboration and awareness to support market demand. Annual, reliable funding and collaboration opportunities are also essential to accelerate market growth effectively.

Collaboration between the UK and Canada can address common challenges and leverage shared frameworks for innovation and funding. While regulation catches up with technological innovation, collaboration between nations can influence international standards and shape unified national policies to facilitate R&D and trade. However, careful attention is required to navigate regulatory landscapes and establish frameworks for sustainable collaboration to ensure long-term economic opportunities and market stability.

02. Acronyms

3D	Three-dimensional
6DOF	6 degrees of freedom
AI	Artificial intelligence
B2B	Business to Business
B2C	Business to Consumer
CDL	Creative Destruction Lab
CDM	Centre for Digital Media
CMF	Canada Media Fund
DBT	Department for Business and Trade
DIGITAL	Digital Technology Cluster
DSIT	Department for Science, Innovation and Technology
FCDO	Foreign, Commonwealth and Development Office
GEM	Global Expert Mission
iOS	iPhone Operating System
KPI	Key Performance Indicators
SIN	Science and Innovation Network
HMD	Head-mounted display
LBE	Location-based entertainment
LBVR	Location-based virtual reality
ML	Machine learning
R&D	Research and development
SME	Small and medium-sized enterprises
VFX	Visual effects
UKRI	UK Research and Innovation
WebXR	Web-based immersive reality

Augmented Reality (AR)

A technology that superimposes a computer-generated image on a user's view of the real world.

Extended Reality (XR)

An umbrella term that encompasses all immersive technologies.

Haptics

The use of technology that stimulates the senses of touch and motion, especially to reproduce in remote operation or computer simulation the sensations that would be felt by a user interacting directly with physical objects.

Mixed Reality (MR)

A medium consisting of immersive computer-generated environments in which elements of a physical and virtual environment are combined.

Virtual Reality (VR)

The computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a virtual headset, gloves fitted with sensors, or a full body haptics suit.





03. Introduction

Innovate UK, Innovate UK Business Connect and the Global Expert Missions

Innovate UK supports business-led innovation and is part of UK Research and Innovation (UKRI).¹ UKRI convenes, catalyses and invests in close collaboration with others to build a thriving, inclusive research and innovation system. To this end, Innovate UK helps businesses to identify the commercial potential in new technologies and turn them into new products and services that will generate economic growth and increase productivity. With a strong business focus, Innovate UK drives growth by working with companies to de-risk, enable and support innovation. Innovate UK Business Connect exists to connect innovators with new partners and new opportunities beyond their existing thinking – accelerating ambitious ideas into real-world solutions. Innovate UK Business Connect is part of the Innovate UK group.

As innovation is increasingly a global endeavour and the ambition of UK businesses to become truly international enterprises is at its highest, Innovate UK established its GEM² programme in 2017. Delivered by Innovate UK Business Connect, in partnership with the FCDO Science and Innovation Network (SIN),³ GEMs help further Innovate UK's global strategy by providing the evidence base for where it should invest and by providing the opportunities for UK businesses to build partnerships and collaborations with key economies.

¹ <https://www.ukri.org/>

² <https://ktn-uk.org/programme/global-expert-missions/>

³ <https://www.gov.uk/world/organisations/uk-science-and-innovation-network>

Mission Overview and Objectives

This GEM brought together a team of UK industry experts to assess the immersive technology industry in Canada to identify key areas for collaboration and potential programmes needed to enable UK innovators to collaborate with Canadian partners.

The overarching Mission objectives are:

1. To help determine how Innovate UK can best support UK businesses more effectively and efficiently when considering innovation partnerships with Canada. This would include where best to focus efforts in terms of technology and sector areas, locations and the type of programmes needed to maximise opportunities between Canada and the UK.
2. To provide insights into where there are synergies in policy and strategy between the two countries in immersive technology and determine whether there is an appetite for further collaboration.
3. To understand the Canadian market and key stakeholders in immersive technology and develop strategies for long-term engagement to support business collaboration for new products and services.
4. To identify challenges and opportunities for developing innovative products and services when considering collaboration with Canada.



Mission Scope

Built around UK business, policy and research representation, the GEM aimed to:

1. Inform UK businesses and government

The findings and opinions of experts on the topic of the GEMs are made available to UK businesses and government departments. These inform UK businesses about potential opportunities for innovation in the country and the UK government on how it can help UK businesses make the most of those opportunities.

2. Build international collaborations

The expert insights will help inform how Innovate UK can best help UK businesses find and exploit the opportunities for innovation partnerships. The GEM creates connections with key organisations and people that will deepen and widen the collaboration with the partner country to benefit UK business.

3. Share UK capabilities

During the Mission, the delegation of experts will use the opportunity to promote and share the UK's innovation strengths.

Immersive technology is the most significant and most disruptive technology since the internet with the most transformative potential worldwide. While immersive technology is impacting every sector, the creative industries, alongside manufacturing, skills, training and health, are well ahead of the curve.

The goal of the GEM is to support the development of these technologies and to support the development of the sector in the UK, and potential collaborations with the global market.





04. Sector Overview

Overview of Canada's Immersive Technology Ecosystem

Much of the information in the following section has been provided by the Information and Communications Technology Council (ICTC), a neutral, not-for-profit, national centre of expertise for the digital economy in Canada.⁴ The ICTC supported the GEM programming.

Size of Immersive Technology Ecosystem in Canada

Comprised of more than 350 companies, Canada's immersive technology industry spans four main hubs of activity in Toronto, Vancouver, Montreal, and Alberta, and several smaller hubs in Central and Atlantic Canada. The technology's growing success in Canada is partly attributable to its roots in several other robust industries, notably the video game and VFX industries in Montreal and Vancouver; digital media in Toronto; enterprise technology in Alberta; and defence in Eastern Canada (national defence organisations were early adopters of immersive technology). Collectively, Canada's immersive technology industry was valued at approximately \$0.6 billion in 2018 and was projected to grow to approximately \$8 billion by 2022, with AR and MR accounting for most of this growth.

More than 100 new companies with immersive technology products and services were founded across Canada between 2014 and 2017. Despite its growth, Canada's immersive technology industry is still maturing. In 2020, about 91% of companies in the industry were small to medium sized enterprises (SMEs) with less than 499 employees. A more detailed look at small immersive technology companies in Canada finds that 83% have fewer than 26 employees, and 63% have between two and ten. For a Canadian emerging industry, these figures are not out of the ordinary; SMEs make up 99.8% of all businesses in Canada. Canadian ICT companies also tend to be small; in 2018, 85.3% of all Canadian ICT companies had between one and nine employees.⁵

⁴ Matthews, Mairead, "Briefing Note on Canada's Immersive Technology Industry and Innovation Ecosystem," December 2023, Information and Communications Technology Council.

⁵ <https://ictc-ctic.ca/reports/spanning-the-virtual-frontier>

Location of Companies

The size and depth of provincial ecosystems depends largely on population size and the availability of skilled talent with relevant skills. More densely populated provinces with a higher saturation of digitally skilled talent have larger immersive technology ecosystems. Notably, Ontario, British Columbia and Québec have the largest provincial ecosystems in Canada.⁶

Common Business Models

Canada's immersive technology industry has a near equal distribution of "product" and "service" companies. Product companies account for approximately 50% of the Canadian immersive technology companies: these companies supply immersive technology products, such as video games, entertainment experiences, and content development tools. Service companies, meanwhile, account for 46% of Canadian immersive technology companies: these build custom ICT solutions for clients as a service. Hybrid product and service companies account for the remaining 4%.

Approximately 56% of the companies in Canada's immersive technology ecosystem focus entirely, if not exclusively, on immersive technology. The other 44% provide a broad range of technology products and services, with immersive technology accounting for just one of their offerings.⁷



⁶ <https://ictc-ctic.ca/reports/spanning-the-virtual-frontier>

⁷ <https://ictc-ctic.ca/reports/spanning-the-virtual-frontier>

Distribution of Companies by Sector

Increasingly, immersive technology companies in Canada operate in sectors outside the entertainment industry. In recent years, new use cases for VR, AR, and MR have expanded their reach beyond entertainment. In 2020, 81% of Canada's immersive technology companies operated in industries outside of entertainment, including national defence and first response, the medical and pharmaceutical industries, real estate, manufacturing and heavy machinery, and energy, mining, and other parts of the natural resources sector.⁸

⁸ <https://ictc-ctic.ca/reports/spanning-the-virtual-frontier>



Canadian Market Strengths

Canada has well established business incentives to stimulate growth, research and innovation, including digital media tax credits which stimulate companies to stay and grow in each province, which has been crucial for catalysing the growth of the immersive technology market in Canada. More information on the tax credits can be found in **Section 5** of this report.

Canadian universities have established programmes to develop skills in XR and virtual production with immersive technology integrated into many university programmes across the country. Universities have strong industry ties, focusing on applied skill development, pairing students with industry clients and partners.

Many events are held in Canada as it is viewed as more neutral than the US, and a good connection point as immigration rules are not as strict as in the US. Reflective of the country's openness to immigration is its incredibly diverse population, offering richness in audience and perspectives, with many small and start-up companies.

While the Canadian immersive technology market shares many of the same or similar funding schemes across the country, each region has developed with its distinct strengths. On the GEM to Canada, delegates visited Vancouver, Toronto, and Montreal.

Vancouver

Vancouver was described many times during the mission as “Hollywood’s North” and “Hollywood’s back-door” given its close proximity to Los Angeles and strong film industry. Film work is frequently outsourced from the USA to Vancouver as work can typically be done cheaper than in the US and there is a very strong talent pool in film industry-related roles. As well as attracting international talent, Vancouver is home to many universities where talent is being developed locally with programmes dedicated to film. Alongside film, Vancouver is establishing itself as an immersive technology talent hub. Universities in Vancouver have well established immersive technology programmes across creative and industry applications. There is a strong focus on industry partnerships and applied work experience for students in masters programmes.

Toronto

While Vancouver is Hollywood's North, Toronto, as Canada's commercial, distribution, financial and industrial centre, can be viewed as "New York's North".. There is a strong technology scene in the city which is also home to many conferences and festivals throughout the year, including in the immersive technology space making it an ideal location to make contact with local markets across Canada converging in the city for events. Toronto is also known as a university city, with good partnership funding opportunities enabling the universities to work with a wide range of partners. Nearby are also several colleges in Southern Ontario, and Waterloo which is a major research hub.

Montreal

Montreal is distinctly a hub for the arts with many funding opportunities and a tightly knit ecosystem of immersive technology companies. This has created a vibrant immersive technology ecosystem in the creative industries and a well-developed audience for immersive experiences. The city is viewed as an important test bed and launchpad for immersive experiences before national and international export.





Industry Challenges

Interviewees in ICTC's 2019-2020 study cited challenges securing domestic funding and domestic customers. Most felt it was difficult to secure funding from Canadian investors to develop immersive technology products and services. A reluctance among investors to take on what was, at the time, a riskier technology, may have worsened the ability of Canadian companies to find funding. Many interviewees also reported having to look abroad to find customers for their business. Despite there being many suppliers of immersive technology products and services in Canada, adoption of the technology by Canadian companies was somewhat less prevalent when the study took place.

In terms of barriers to adoption, interviewees noted that adopting and maintaining immersive technology products and solutions was, at the time, expensive, making it difficult for smaller companies to adopt and deploy immersive technology at scale. In addition to cost, interviewees felt adoption rates were impacted by ease of use, comfortability, and to what degree a solution was compact and mobile. Finally, interviewees highlighted how important it is to work with customers who are already collecting and engaging spatial data on a regular basis, or explain to customers the importance of doing this. With spatial data already accounted for, customers are more likely to be familiar with and open to digital assets like 3D models.⁹

General industry challenges include difficulties to attract and retain talent in immersive technology sectors as a great deal of talent is flowing between the film and video game industries, competing with the talent pool for applications in immersive technology. Access to facilities outfitted with the most up to date immersive technology infrastructure such as volumetric capture, motion capture, VR and AR hardware and software is also limited as there is no central publicly funded hub. If start-ups or companies want to have access to develop, test, or iterate applications of immersive technologies across sectors, it is cost prohibitive to rent private or university spaces which limits the pace and scale of innovation and its adoption by the mainstream market.

Many challenges identified in the Canadian immersive technology market are shared with global immersive technology stakeholders. A lot of capital is required up front for new companies to adopt and build a business around immersive technology. Most of the capital required is for expensive hardware and software licences as well as salaries which, as discussed in roundtable sessions during the mission, appear to be below the market norm when compared to similar roles outside of the immersive technology market.

⁹ <https://ictc-ctic.ca/reports/spanning-the-virtual-frontier>

In Venture Capital, branding is not yet aligned with the XR industry, making it challenging to identify potential investors to approach. Both investors and grant funding opportunities require proof of innovation and product market fit, which is still challenging in the immersive technology sector. As with any emerging sector, commercial data points, customer profiles and audience insights are nascent, making immersive technology investments high risk.

In Canada, grants that are applicable to commercial and cultural applications of XR focus on R&D or cultural impact, however there appears to be a gap in funding to establish infrastructure for the distribution of XR as well as integration of XR in commercial applications. Typically, this would be VC funded, however the Canadian market does not have a strong investor network in this sector.

With a fragmented grant funding ecosystem, one company may also need to apply for multiple grants to get all the funding required. Fragmentation is caused by nascent programmes, policy and regulations in the immersive technology sector. While pilot projects get a lot of attention from funding in Canada, the challenge is going from pilot project to product.

Local stakeholders also noted that company taxes in Canada are high, although there are strong incentives to support innovative companies.

While the Canadian immersive technology market shares many of the same or similar strengths across the country, the locations visited also face specific challenges which are outlined overleaf.



Vancouver

Vancouver is well known for its activity in the film space, however it is not known as an immersive hub. Many people living in and visiting Vancouver are attracted to its wealth of outdoor activities amidst stunning mountains, rivers, forests and ocean. These activities compete directly with LBVR and immersive experiences. While XR companies are creating immersive experiences in Vancouver, they often look elsewhere to distribute content such as in Toronto and Montreal where audiences for immersive content are much more established. Additionally, Vancouver struggles to attract and retain talent due to the cost of living in the city, which in turn places an additional burden on start-ups and studios to cover high salary expectations. As a result, some teams are hiring internationally with remote work opportunities.

Finally, Vancouver's downtown core is well established and developed with little space to redevelop venues for immersive experiences, increasing project risk with high overheads related to rent and renovations.

Toronto

Similar to Vancouver, Toronto's downtown area is well established with little space to redevelop venues for immersive experiences, increasing project risk with high overheads related to rent and renovations.

Montreal

As a hub for the arts, Montreal's stakeholders in immersive technology face a particularly strong challenge to make the leap from publicly funded initiative to commercialised and revenue generating activity. This is not a blanket statement as experiences such as *The Infinite* (primarily privately funded) coming out of Montreal have seen great commercial success.



Gaps in the Canadian Immersive Market

Throughout the GEM, Canadians representing a variety of sectors indicated the need for immersive technology solutions. In particular, there are gaps in the Canadian immersive market for mining, forestry and healthcare applications of VR and AR.

Many representatives closer to the immersive technology market also identified the importance of developing infrastructure for touring LBVR experiences, as well as a pipeline for XR content distribution to audiences at home and in physical spaces. While game stores such as Steam, the Meta Quest store and Pico games store already exist, there is no central hub for XR experiences or a streamlined pipeline for multi-platform distribution.



Gaps in the UK and Canadian Immersive Technology Market

The UK and Canadian market share gaps in the immersive technology market. During discussions, several gaps were identified.

- 1. There is no standardised onboarding for VR experiences** for cultural centres, museums or other physical spaces where XR is distributed. Similar to how a flight safety video onboards passengers at the start of each journey, VR and AR experiences could benefit from a ready-made onboarding experience for each headset.
- 2. There is no central hub for the distribution of XR experiences.** Current ownership of distribution platforms is predominantly driven by the games and film industry. There is no centralised hub to distribute and monetise XR content specifically for the XR industry, which supports multi-platform distribution.

During the onboarding process, visitors would learn everything they need for the experience, such as using controllers and adjusting focus and volume as well as headset fit. In traditional gaming, player orientation is built into early gameplay. In industrial applications, orientation is built into a training initiation session or courses.

While these examples are both on a case-by-case basis, VR would benefit from a standardised tutorial for each AR and VR device. This would reduce cost for commercial applications such as training staff at hospitals how to use VR, as well as in the context of LBVR where venue staff are required to support customers, many of whom are experiencing VR for the first time.



3. Hardware costs, which is one of the greatest barriers to entry in the immersive technology market, are not supported by grant funds. The CMF and UK representatives identified the lack of funding for hardware as a huge gap in the current funding ecosystem. Additionally, the lack of payment plans with headset manufacturers, such as Pico, Meta, Magic Leap and HTC, makes it challenging to purchase hardware required for a project which will generate revenue over the long term but requires initial capital investment to get off the ground. Therefore, it is hard for SMEs and creatives to purchase and distribute content at scale. This is also challenging for cultural centres to acquire and distribute XR content due to hardware costs, limiting public exposure to VR and AR experiences. While venues like the Oasis's projected experiences in Montreal are booming in popularity and supporting the immersive technology market, they are also competing directly with the distribution of LBVR due to higher costs often associated with hardware and audience management.

4. High cost of labour is driven by competition for a talent pool also in demand by the most established film and gaming industries. Grants offsetting a percentage of labour costs upfront in lieu of after-the-fact tax credits could attract skilled talent to the immersive technology industry. UK and Canadian representatives also noted that salaries in the immersive technology market for technical skill sets appear to be lower than market standards for the same skill sets in other industries, making it challenging to attract and retain top talent. Generally speaking, across all industries, there is a shortage of technically skilled labourers. Coding and development-oriented roles are paid significantly more in the US, and somewhat more in Canada than the UK, given the support through R&D tax credits.



5. A central innovation and immersive sector hub that connects the industry

is desired by Canadian and UK stakeholders. While a centre such as this would likely require significant public funding or subsidies for operating costs and the maintenance and replacement of hardware and software infrastructure, it could stimulate innovation and reduce risk for SMEs adopting immersive technology in their business practice and product offerings.

6. Central Immersive Technology News and Resources Centre:

there are no strong sources of information relating to developments in the immersive technology market. News outlets like Road to VR, Upload VR and XRMust primarily cover gaming and creative applications of XR, however there is no central source for information or resources relating to the wider XR market such as industrial applications, healthcare and research. The industry could also benefit from an XR directory of vendors, freelancers, and facilities in the immersive technology industry.





05. The Innovation Landscape

Innovation Support

In the following section we provide information on the organisations supporting innovation in immersive technology development and/or application at a national and provincial level.

National

Information and Communications

Technology Council (ICTC): a neutral, not-for-profit national centre of expertise with the mission of strengthening Canada's digital advantage in the global economy. ICTC's goal is to ensure that technology is utilised to drive economic growth and innovation and that Canada's workforce remains competitive on a global scale.

Scientific Research and Experimental

Development (SR&ED): provides tax credits back for R&D. The SR&EDtax incentives are intended to encourage businesses to conduct research and development in Canada.

Mitacs: is a non-profit national research organisation that, in partnerships with Canadian academia, private industry and government, operates research and training programmes in fields related to industrial and social innovation. They support with strategic connections, expert guidance and financial support towards the cost of talent to de-risk innovative ideas.

Newlab: Newlab seeks out top start-ups and connects them with international investors. They support international start-ups. They also have thousands of square feet of physical infrastructure and dedicated test sites to prototype and pilot emerging tech under real-world conditions. Newlab collaborates with leaders across industry and government with a new vision for technology-led economic development that drives meaningful progress for all.

CMF: fosters, develops, finances and promotes the production of Canadian content and applications for all audio-visual media and helps share it with the world.

Innovation Science and Economic

Development Canada (ISED): works with Canadians in all areas of the economy and in all parts of the country to improve conditions for investment, enhance Canada's innovation performance, increase Canada's share of global trade and build a fair, efficient and competitive marketplace. ISED is the federal institution that leads the Innovation, Science and Economic Development portfolio.

Canadian Institute for Health Research

(CIHR): is Canada's federal funding agency for health research. Composed of 13 Institutes, CIHR collaborates with partners and researchers to support discoveries and innovations that improve Canadian health and strengthen the health care system.

CanExport: provides funding for Canadian companies to go to trade shows, adapt documentation to foreign languages, and other activities that support the export of Canadian businesses overseas.

Canadian International Innovation Program

(CIIP): The CIIP supports Canadian companies to pursue international R&D collaboration with a foreign partner on projects that have the potential for commercialisation.

- There are already collaborations with UK companies
- Each company must retain 30% of the IP resulting from the R&D

EUREKA: the world's biggest public network for international cooperation in R&D and innovation, present in over 45 countries. Canada and the UK are both members of EUREKA.

Telefilm Canada: works to finance, develop, and promote the screen-based industry of today and tomorrow in Canada. This includes a directory of projects that Telefilm Canada has funded and co-productions that have been certified.

Canadian Arts Council interactive and

digital media funds: are a part of Canada's public arts funding body, contributing to the vibrancy of creative and diverse arts and literary scene through grants, services, prizes, and payments to Canadian artists and arts organisations. This includes a number of grant funding opportunities for immersive technology projects such as:

- **Cultivate Grants** provides grants of up to \$250,000 to implement, pilot and prototype innovation projects that will strengthen the arts sector.
- **Seed Grants** provide seed funding to kickstart small-scale innovation activities that explore and develop capacity, partnerships, and promising innovation ideas.

National Research Council of Canada Industrial Research Assistance Program (NRC IRAP): is Canada's leading innovation assistance programme for small and medium-sized businesses. Their incubator programme supports SME growth through funding and innovation services. The outcome must generate revenue growth for the business and job creation as NRC's mandate is to support wealth creation in Canada through innovation. NRC IRAP also assists firms in developing, adopting or adapting technologies for commercialisation. There is a lot of demand for IRAP since funding is non-repayable. Most companies applying do not receive funding, but take advantage of other benefits such as networking and advisory services.

NRC-IRAP IP assist: a programme supporting the protection of IP assets, IP strategy, and insights into the IP landscape. It also provides funding to help Canadian businesses execute IP strategy.

Digital Technology Cluster (DIGITAL): Accelerating the development and adoption of digital technologies that keep Canadians healthy, address climate change and drive economic productivity. Through a unique combination of co-investment, cross-industry collaboration, IP creation and digital talent development, DIGITAL supports the digital innovation ecosystem in Canada. It is one of the five Canadian Government supported Global Innovation Clusters.





Provincial

DigiBC: is the Creative Technology Association of British Columbia (BC). DigiBC's mission is to promote, support and accelerate the growth of BC's Creative Technology industry to the benefit of current and future generations. Membership consists of companies from the video game/interactive, animation, visual effects, VR/MR/AR, and virtual production sectors, along with technology enablers and service providers who work alongside members to help grow the creative technology economy in the province. They achieve their goals through advocacy and policy engagement, growth programmes, talent programmes, events, and member benefit initiatives.

PacifiCan: PacifiCan is the dedicated federal economic development partner for British Columbia. Their vision is to propel B.C. forward with impactful projects and partnerships, creating enduring prosperity for all British Columbians. Funding is generally awarded for two to five years.

Creative BC: supports BC creators, entrepreneurs and companies with strategic investment to develop their projects, gain access to new markets, build stronger global partnerships and make a creative impact, domestically and internationally. Creative BC funding programmes drive creation and export of domestic creative content. From development support to international trade fair presence, their programmes and activities aim to: optimise funding opportunities for projects and companies; grow BC's ecosystem of support in which creative entrepreneurs can thrive; and give BC's creative industries access to national support and international markets that will increase our province's success in the sector.

BC Arts Council (BCAC) was created in 1995 as an agency of the Province of British Columbia under the Arts Council Act. The BCAC nurtures and supports arts and cultural activity in communities across British Columbia. From community arts in rural and urban centres, to individual artists, professional performing arts companies, Indigenous artists and cultural organisations, art galleries, local museums and music festivals – BCAC supports a range of activities while engaging with artists and communities to inform policies and programmes.

Life Sciences BC supports members, from entrepreneurs and start-ups to larger multinational organisations, with ideation, commercialisation, training, mentoring, connections to industry funders and strategic partners, and more.

BC Tech hosts high-quality events that bring the community together to learn, make connections, build relationships, and help tech companies grow. Its mandate is to ensure the growth of future anchor companies needed to strengthen and sustain the provincial tech sector.

Ontario Tax Credits:


Ontario Tax Credit programmes include the following:

- **OIDMTC:** Ontario Interactive Digital Media Tax Credit
- **OPSTC:** Ontario Production Services Tax Credit
- **OFTCC:** Ontario Film and Television Tax Credit
- **OCASE:** Ontario Computer Animation and Special Effects Tax Credit

The primary purposes of the outcome content need to either educate or entertain users under the age of 12. Credits are only for companies based in Ontario with costs in Ontario, however worth noting as the incentives indicate a rich support ecosystem for the arts and innovation, specifically the Ontario Interactive Digital Media Tax credit.







Ontario Centre for Innovation (OCI) helps Ontario innovators connect with researchers, industry partners, and funding needed to commercialise the next generation of made in Ontario IP and solutions. The programme is funded by the Ministry of Economic Development, Job Creation and Trade.

To date OCI has invested \$218M, which is inclusive of \$150M in co-investments from industry and partners into innovation projects. OCI supports projects creating jobs and those which make Ontario companies more competitive globally. Investments of up to \$1 million are made per project, although VR is not a major focus yet. Work funded at the graduate level is non-dilutive, while start-up funding (pre-seed and seed) is dilutive. OCI also supports international companies with a soft landing in Canada, and is very connected with the VC ecosystem from pre-seed to series D and beyond. Select OCI initiatives and programmes are outlined here:

- **Collaborate 2 Commercialise**

This programme supports the collaboration between Academia and Industry to solve an industry-based problem and drive the commercialisation of Intellectual Property [IP]. The institution will leverage the unique skills and specialised infrastructure that is instrumental to streamline internal innovations and commercialisation needs. Resulting in targeted training of individuals and direct engagement with Industry to work on commercially viable solutions.

- **Innovating Digital Health Solutions**

The Innovating Digital Health Solutions (IDHS) programme is designed to encourage applications from Ontario Health Teams (OHTs), inclusive of Indigenous Health Care Organisations and other health service providers [HSPs] to work in collaboration with Ontario based technology vendors in evaluating, adopting, and implementing digital health technologies.

IDHS is a programme of the Government of Ontario's Ministry of Health (MOH), administered by the Ontario Centre of Innovation.

IDHS is designed to encourage and foster partnerships between Ontario Health Teams and Ontario-based Technology Vendors to evaluate, adopt, and implement market-ready innovative digital health and/or virtual care solutions that address Ontario's health system priorities and to drive collaboration that improves patient outcomes, optimises the impact of investment in health innovation and supports the opportunity to scale health innovation.

- **Ready for Market**

Ready 4 Market (R4M) is Ontario's leading pre-seed investment fund. Through the fund, OCI co-invests with angel and other investors in early-stage Ontario-based start-ups with competitive IP commercialising transformative technologies to support their growth into scalable businesses. This investment de-risks the opportunity, helps the start-up become investor and customer ready, and attracts private sector co-investment and follow-on investment.

- **Next Generation Networks Demonstration Program**

The Next Generation Networks Demonstration program (NGNP) provided SMEs with access to an ultra-high speed open multi-vendor network and cloud testbed, business and technical expertise and talent development opportunities to support them in the development of next-generation digital technologies, products and services and company growth. The programme was offered through a partnership between the Centre of Excellence in Next Generation Networks (CENG), OCI and the Government of Ontario.



Innovation Performance

The following section contains text provided by the Information and Communications Technology Council (ICTC) of Canada:

The World Intellectual Property Organisation's Global Innovation Index ranks Canada 15th of 132 countries globally on its innovation performance; and 14th among the top 50 high-income countries. WIPO cites Canada as an innovation leader, performing above expectations for its GDP and level of development.¹⁰

¹⁰ "Canada ranking in the Global Innovation Index 2023," 2023, WIPO, <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2023/ca.pdf>

Canada's Strengths in Innovation

Human Capital and Higher Education

Canada has a highly educated workforce, strong post-secondary institutions, and robust higher education research infrastructure.

Canada also has the most highly educated workforce in the OECD (Organisation for Economic Co-operation and Development), as measured by the proportion of adults with tertiary education.¹¹ Highly educated technology personnel are less costly in Canada than in countries like the U.S., in part due to the value of the Canadian dollar.

¹²This is a key aspect of foreign direct investment attraction in many Canadian cities. ¹³

According to WIPO's GII, Canada ranks 10th out of 132 countries globally when it comes to the strength of its human capital and research infrastructure: Canada ranks high in overall university rankings, university-industry R&D collaboration, the number of researchers as a percentage of full-time employees, and the number of graduates in science and engineering as a percentage of all graduates. ¹⁴

¹¹ "Strengthening the Impact of Foreign Investment on Domestic Innovation," 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

¹² "Strengthening the Impact of Foreign Investment on Domestic Innovation," 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

¹³ "Strengthening the Impact of Foreign Investment on Domestic Innovation," 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

¹⁴ "Canada ranking in the Global Innovation Index 2023," 2023, WIPO, <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2023/ca.pdf>

Canada's Weaknesses in Innovation

Availability of Domestic Capital

Canada has limited domestic avenues for acquiring VC funding, meaning Canadian start-ups that wish to scale must learn to seek capital abroad. Canadian start-ups regularly report that there is a dearth of start-up and scale-up capital available in Canada, compared to other countries.¹⁵ In 2020, Innovation, Science and Economic Development Canada conducted a study to find out whether enough “scaling capital” is available to Canadian growth-oriented, medium-sized firms.¹⁶ The study found that Canadian businesses rely almost exclusively on investors from the United States when seeking deals valued higher than \$20 million. Additionally, the study found that there is insufficient capital available for deals valued between \$2 and \$5 million.

Small Domestic Market

In comparison to other large economies around the world, Canada has a small population, business ecosystem, and final consumption expenditure.¹⁷ Many Canadian businesses seek out U.S. or other markets as destinations for their goods and services.¹⁸ There are limited large industries and businesses in Canada that can act as initial buyers of technology company goods and services.¹⁹ Many stakeholders in Canada's innovation ecosystem voice a desire for Canada's innovation ecosystem to be more densely populated with more companies of all sizes, but with large companies that can act as first-buyers for new technologies.²⁰

¹⁵ “Strengthening the Impact of Foreign Investment on Domestic Innovation,” 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

¹⁶ “Strengthening the Impact of Foreign Investment on Domestic Innovation,” 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

¹⁷ “Strengthening the Impact of Foreign Investment on Domestic Innovation,” 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

¹⁸ “Strengthening the Impact of Foreign Investment on Domestic Innovation,” 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

¹⁹ “Strengthening the Impact of Foreign Investment on Domestic Innovation,” 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

²⁰ “Strengthening the Impact of Foreign Investment on Domestic Innovation,” 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

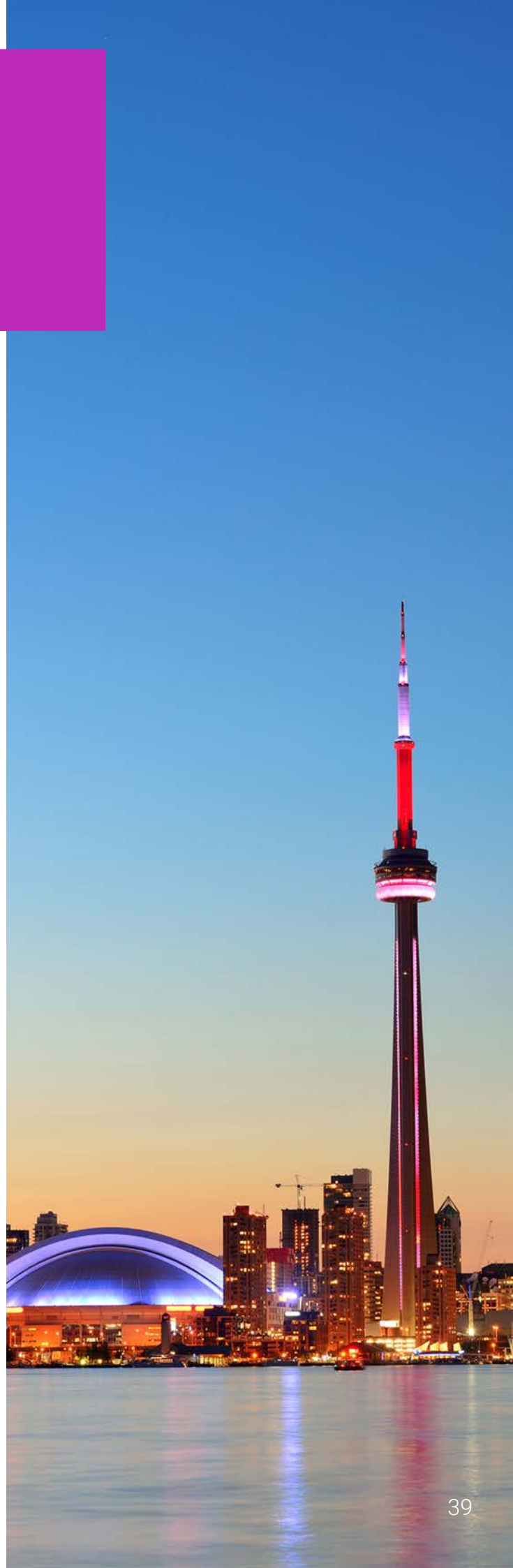
Canadian Ownership and Retention of Intellectual Property Assets

It is not uncommon for high-value Canadian start-ups and intellectual property (IP) assets to be acquired by foreign multinational firms once they have proven their value in the market.²¹ Being acquired by a foreign multinational is also a common form of “exit” for Canadian startups.²² Some acquired start-ups will stay in Canada as local subsidiaries, while others will move abroad or disband following the acquisition.²³ While M&As are not necessarily negative, increased retention of Canadian-owned companies as they scale could be more beneficial to Canada’s innovation ecosystem in the long run.

²¹ “Strengthening the Impact of Foreign Investment on Domestic Innovation,” 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

²² “Strengthening the Impact of Foreign Investment on Domestic Innovation,” 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

²³ “Strengthening the Impact of Foreign Investment on Domestic Innovation,” 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>





White Papers and Policies

Policy Context

Canada is a federal country with ten provinces and three territories, the largest of which are Ontario, Québec, and British Columbia. Canada's constitution assigns the federal and provincial governments legal jurisdiction over different policy files: the federal and provincial governments both regulate trade and commerce, the federal government manages Canada's intellectual property regimes, and the provincial governments oversee higher education, including universities and colleges,²⁴ as well as related policies. In sectors such as healthcare, which have provincial and national regulatory bodies, policies must be navigated first at the provincial and then at the national level.

Immersive technology in Canada, like in the UK, is currently pigeonholed into pre-existing policy frameworks as innovation outpaces regulation. However, policy specific to immersive technology will evolve and will be a key consideration for UK companies exploring the Canadian market.

Canada's federal and provincial governments both fund and organise Canadian R&D activity. In 2023, public funding accounted for 38% of Canada's gross domestic expenditures on R&D. Of this, higher education accounted for 17%, federal funding accounted for 16.6%, and provincial funding accounted for 4.5%.²⁵

While there are a variety of public funding programmes for Canadian R&D, the largest of these is Canada's Scientific Research and Experimental Development (SR&ED) tax incentive programme.²⁶ SR&ED is regularly cited by foreign direct investors and foreign multinationals as one of Canada's main R&D strengths. Several Canadian provinces (for example, British Columbia²⁷ and Ontario²⁸) provide tax incentives to companies operating in the interactive digital media industry.

²⁴ Matthews, Mairead, "Briefing Note on Canada's Immersive Technology Industry and Innovation Ecosystem," December 2023, Information and Communications Technology Council.

²⁵ Matthews, Mairead, "Briefing Note on Canada's Immersive Technology Industry and Innovation Ecosystem," December 2023, Information and Communications Technology Council.

²⁶ "Scientific Research and Experimental Development (SR&ED) tax incentives," 2023, Government of Canada, <https://www.canada.ca/en/revenue-agency/services/scientific-research-experimental-development-tax-incentive-program.html>

²⁷ "Interactive digital media tax credit," 2023, Government of British Columbia, <https://www2.gov.bc.ca/gov/content/taxes/income-taxes/corporate/credits/interactive-digital-media>

²⁸ "Ontario Interactive Digital Media Tax Credit," 2023, Ontario Creates, <https://www.ontariocreates.ca/tax-incentives/oidmtc>

The table below provides a short summary of public funding programmes for Canadian R&D that are provided by the federal Government of Canada.²⁹

		Can the funding be used to...						Is the funding available to FMNEs in Canada?	Does the funding mention IP as key output?
		Start or buy a business	Hire, buy equipment?	Conduct R&D?	Increase working capital?	Grow and expand?	Sell globally?		
TIER 1	BDC Small Business Financing \$1M max	✓	✓			✓		...	No
	BDC WIT Venture Fund (Seed) \$1M max	✓	✓	✓			✓	...	
	SR&ED Tax Incentive Program \$1.05M max			✓				Yes at a lower rate	Yes
	Innovative Solutions Canada \$1.15M max			✓			✓	Yes but restricted	Yes
TIER 2	IRAP by NRC \$10M max			✓		✓		Yes but only SMEs	Yes
	BDC WIT Venture Fund (Growth) \$10M max	✓	✓	✓			✓	...	No
	Export Programs by EDC \$10M max			✓	✓	✓	✓	Yes	No
	SIF Program \$10M max			✓				Yes but restricted	Yes
TIER 3	FinDev Canada Financing \$20M max			✓		✓	✓	Yes	No
	BDC Business Transition Program No max	✓						...	Yes
	BDC Buying a Business Loan No max	✓		✓		✓		...	Yes
	BDC Real Estate, Equipment No max		✓	✓				...	No
	BDC Working Capital Loan No max		✓	✓	✓		✓	...	Yes
	BDC Technology Financing No max		✓	✓		✓		...	No
	BDC IP-Backed Financing No max	✓	✓			✓		...	Yes

Provincial funding is fairly siloed to each province, while federal grants can have cross-provincial applicants.

²⁹ "Strengthening the Impact of Foreign Investment on Domestic Innovation," 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>



International Cooperation

Collaboration agreement

There is an existing Memorandum of Understanding (MoU) between the Department of Foreign Affairs, Trade and Development of Canada and the Department for Science, Innovation and Technology of the United Kingdom of Great Britain and Northern Ireland concerning cooperation over Scientific Research and Innovation.³⁰

This MOU highlights pre-existing intentions between Canada and the UK to collaborate on research and innovation.

It was shaped to strengthen bilateral cooperation that delivers excellence, and impacts across all fields of research and innovation, including the social sciences and the humanities, and aspiring to work across three pillars of research and innovation collaboration: deep science and technology; commercialisation of innovation; and science diplomacy and governance.

International R&D

When it comes to R&D activity, Canadian businesses and inventors are global actors. Intellectual property (IP) registration data indicates that Canadians file IP in other countries more than they do in Canada, and this trend has only increased over time. In 2018, among the 142,068 Canadian patents in force globally, just 16% were in force in Canada, while the remaining 84% were in force abroad.³¹

In 2019, just 30% of all Canadian trademark applications and 9% of Canadian industrial design applications were filed in Canada.³² As shown in the figure opposite, Canadian inventors and businesses are most likely to file their IP in the United States, followed by Europe, and China.³³

³⁰ https://www.tradecommissioner.gc.ca/innovators-innovateurs/mou_science_innovation_protocole_entente.aspx?lang=eng

³¹ "Strengthening the Impact of Foreign Investment on Domestic Innovation," 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

³² "Strengthening the Impact of Foreign Investment on Domestic Innovation," 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

³³ "Strengthening the Impact of Foreign Investment on Domestic Innovation," 2021, ICTC, <https://ictc-ctic.ca/reports/context-matters>

IP Filing Trends Among Canada's Economic Partners

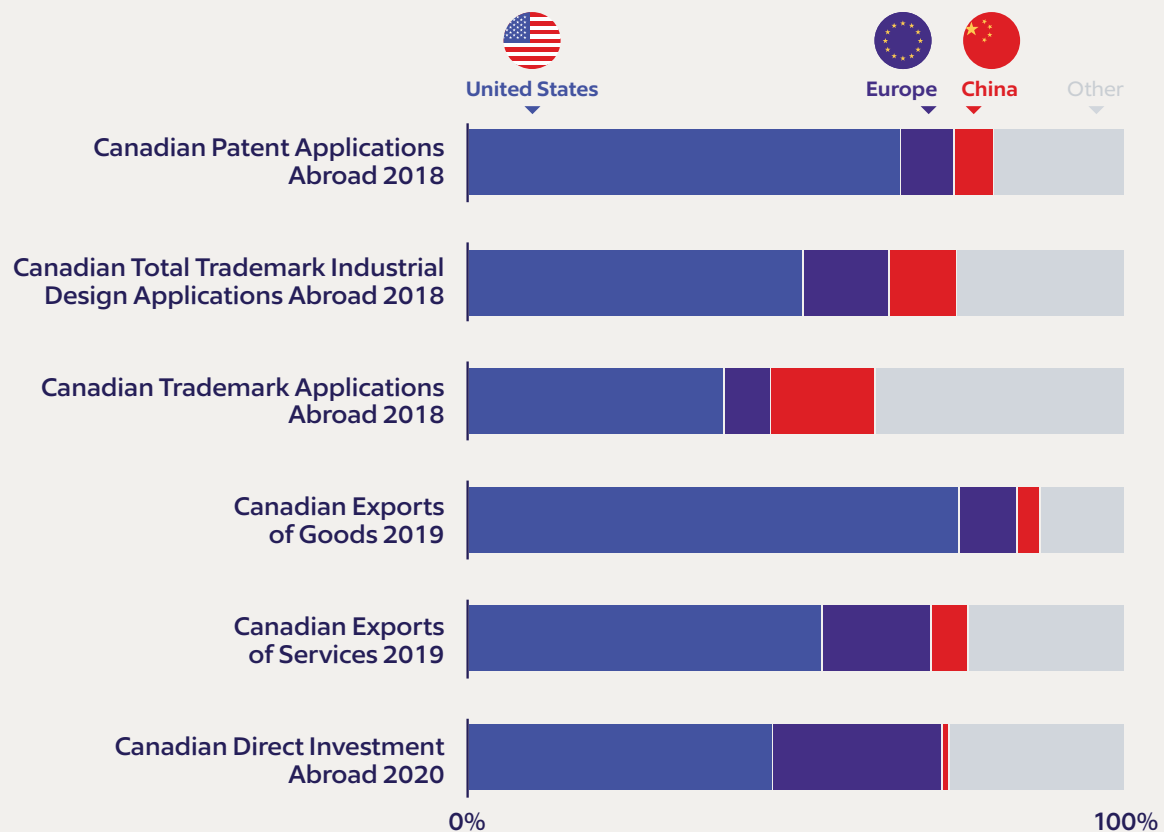


Figure 5: IP filing trends among Canada's economic partners.

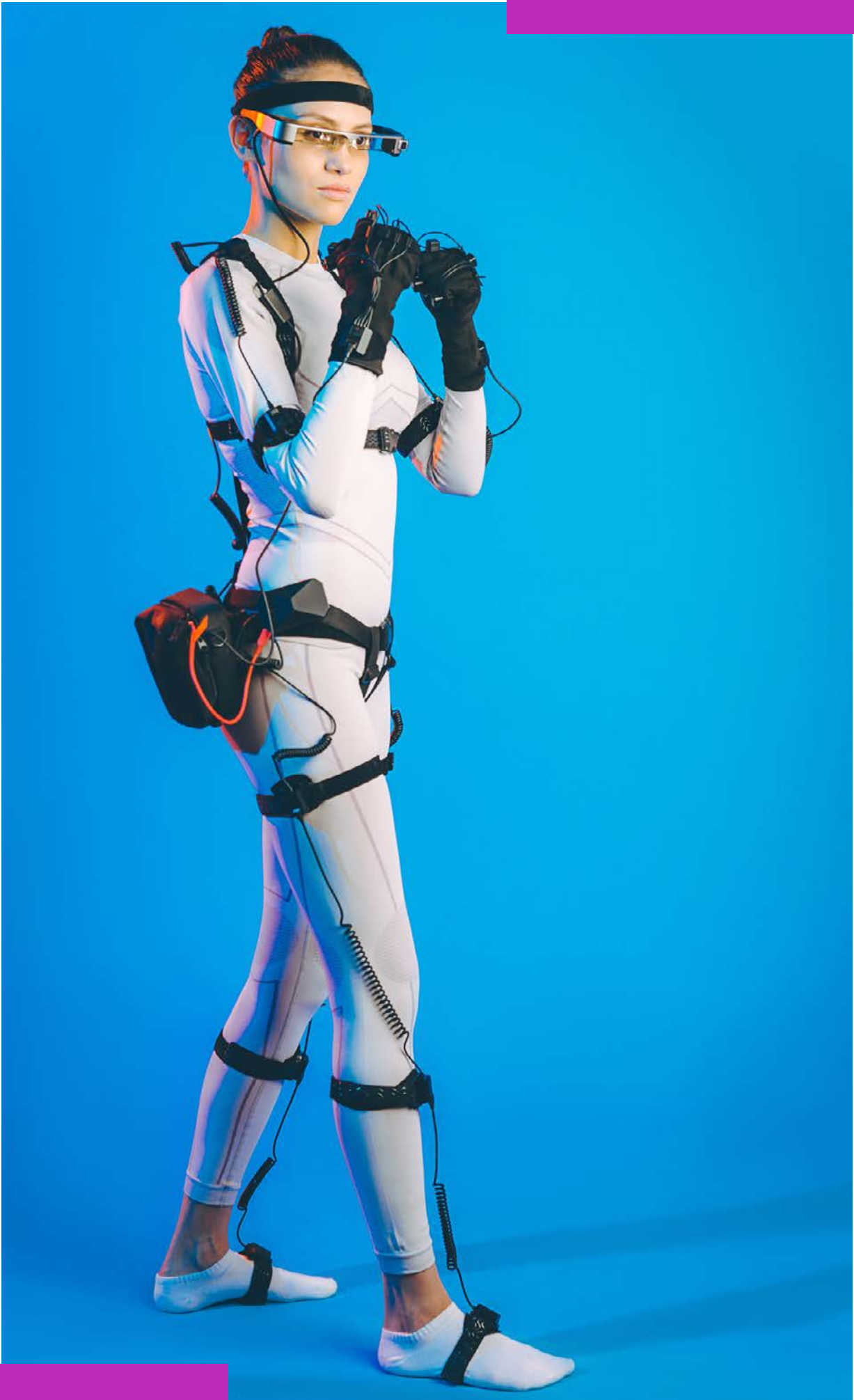
Data source: CIPO IP registration data, 2019; Statistics Canada Balance of International Payments data, 2021; Statistics Canada International Investment Position data, 2021.

Other Strengths

When interviewed, multinational firms also report conducting R&D in Canada because of Canada's beneficial currency exchange rate, political and financial stability, public R&D subsidies and infrastructure, physical

proximity to large international economies such as the United States, and cultural proximity to English and French speaking economies around the world.³⁴

³⁴ Matthews, Mairead, "Briefing Note on Canada's Immersive Technology Industry and Innovation Ecosystem," December 2023, Information and Communications Technology Council.



06. Stakeholder Engagement

The GEM itinerary consisted of a week of meetings, site visits and workshops in Vancouver, Toronto and Montreal. These cities were selected due to the concentration of immersive technology innovators in the regions. The following section highlights key information gathered from stakeholder meetings during the GEM.

Academia

Emily Carr University of Art and Design (ECU) is ranked as the top university in Canada for art and design, and 24th in the world. They have more than 1,800 students enrolled in graduate and undergraduate programmes, with thousands more taking workshops, certificate programmes and individual courses. Merging studio practice, research and critical theory in an interdisciplinary and collaborative environment, ECU encourages experimentation at the intersections of art, design, media and technology. ECU's facilities include a games lab equipped with VR devices, as well as a motion capture studio that is used for university projects as well as for commercial projects to generate revenue for the university.

The **CDM** delivers a 16-month professional graduate programme emphasising collaborative, project-based learning with hands-on experience developing digital media products. The programme is seen as an industry career springboard, where students work with real-world clients during the programme to develop innovative applied solutions to real world problems. Many graduates are hired by the clients CDM works with throughout the programme. International students pay a \$60,000 (CAD) fee for the Master of Digital Media programme, while local students pay a \$40,000 (CAD) fee. Scholarships are available for students with a background in computer science due the shortage in students and talent with skills in this area. Approximately $\frac{3}{4}$ students are international and $\frac{1}{4}$ domestic. The CDM was launched in 2006 after receiving a \$40 million (CAD) grant from the provincial government.

The **Innovation in Dementia and Aging Lab (IDEA Lab)** at the **University of British Columbia (UBC)** works closely with local hospitals and decision makers to integrate R&D solutions into practical applications, collecting data, working with industry partners to support actual case studies, clinical experience and the development of marketing materials. IDEA Lab has close relationships with industrial partners, and family and patient partners, facilitating the implementation of new solutions into wellbeing and healthcare programmes. The timeframe to bring a solution from the R&D stage to implementation in practice has previously taken from three months to two years, depending on the project specifications. Where funding from bodies such as Mitacs is involved, the pathway from R&D to implementation is established prior to the project start date and is a suggested route to the integration of immersive technology solutions in healthcare. Alternative approval routes include approval from UBC as step one, followed by approval from the local health authority to integrate solutions into long-term care.

Key areas of focus for the UBC's IDEA Lab include:

- Using immersive technology for education
- Teaching dementia caregiving using immersive technology
- Using simulations to train soft skills and teamwork
- Supporting residents with long-term care

Below are links referenced during the meeting to relevant previous work:

- **VR interventions**
- **Gamified rehabilitation exercise for older adults in longterm care**



Ontario Tech University, established just twenty years ago, is one of Canada's youngest institutions, and the fastest-growing university in the country, with a strong emphasis on STEM disciplines. Programmes are tech-driven and career-focused, with 100% of students participating in experiential learning with over 500+ industry and community partners. Ontario Tech University is a top research university in Canada and a national leader in clean energy and environmental sustainability research.

Ontario Tech University's ad2mlabs features advanced digital design, manufacturing, and metrology work, currently spearheading digital twin simulations using MATLAB and SolidWorks software. The university also houses a gaming and VR lab supporting game development for entertainment applications, soft skills training, and medical simulations.





Delegates also learned about *Simulating Success: Augmented Reality in Healthcare: maxSIMhealth* by Adam Debrousky who is a part of Ontario Tech University's Faculty of Health. Simulating Success is a research project aiming to revolutionise healthcare through simulation, AR, and gaming. Simulations were developed for cognitive, affective skills, and motor skills training. 3D models were also created to train surgeons in VR.

Another project highlighted during the tour of Ontario Tech University explored the use of AI to care for patients with dementia, creating a conversational robot to detect and manage symptoms of dementia. VR has also been used as a part of senior nuclear engineering students' project simulating radiation levels following a nuclear emergency. This project was created in collaboration with game development students at the university.

Durham College is a post-secondary institution in Ontario, Canada. Durham College's primary hubs related to the mission include a MR capture studio, an AI hub, and social impact hub. The MR capture studio offers support to a range of organisations including screen industries to research, develop and adopt virtual technologies, focusing on real world applications and solutions. The College prioritises projects that will generate revenue for the institution.





Ontario College for Art and Design (OCAD):

Canada's oldest and largest university for art, design, and media. During the meeting, the **Digital Futures** Bachelor Programme was highlighted. In this programme, students create the technologies that shape the way we live, work, and play. Students develop games, wearable technology, mobile apps, VR, interactive installations, and AR. They learn how these new technologies can solve problems, deal with contemporary issues, and create future possibilities. The programme focuses on developing core digital skills, as well as placements with industry and community partners through real-world testing and internships. OCAD's Adaptive Context Environments (ACE) Lab's core research areas include AR, MR, and VR.

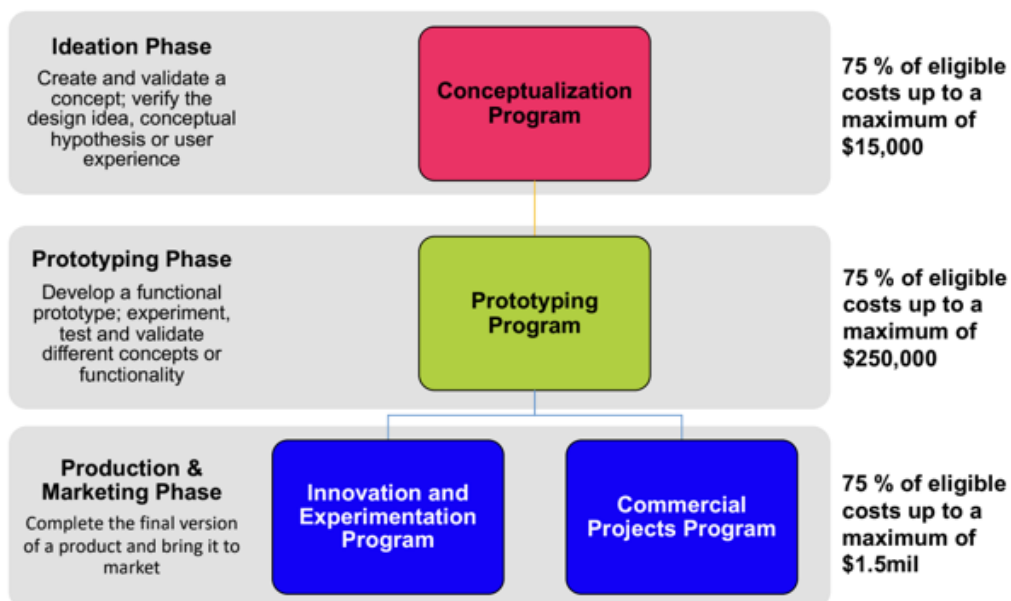


Public Sector

The **CMF** guides Canadian content towards a competitive global environment, fostering industry innovation as well as prioritising a diversity of voices in storytelling and access to content. The CMF fulfils its mandate through fostering, developing, funding and promoting content. The CMF receives financial contributions from the government of Canada and Canada's cable, satellite and IPTV (internet protocol television) providers. The organisation's total annual budget is \$366 million (CAD) with funding broken into linear (film and television) and interactive (immersive and digital media). Productions can be primarily produced in English, French, and Indigenous Languages (Indigenous peoples comprise the First Nations, Inuit, and Métis peoples of Canada).

Since the inception of the programme, \$3.9 billion (CAD) has been invested into 6,700 linear projects, while \$511.9 million (CAD) has been allocated to 690 interactive projects. From 2023-2024, \$313 million has been invested in linear content, while during the same time period \$44.9 million (CAD) has been invested in interactive media. Content funded by the CMF targets Canadian and international audiences. Previous collaborations between the UK and the CMF include an **Immersive Exchange Programme** to foster new talent development and co-production.

INTERACTIVE FUNDING PROGRAMS





The **Digital Technology Cluster (DIGITAL)**, launched in 2017, drives Canada's growth and prosperity through global leadership in digital innovation. It brings together businesses, academia, community and government agencies to solve some of industry and society's biggest challenges. DIGITAL is one of five Global Innovation Clusters across the country, funded by **Innovation Science and Economic Development Canada (ISED)**, it is a non-profit organisation that fosters Canada's global leadership in digital innovation.

DIGITAL is currently focused on funding innovative applications of technology in the natural resources and health sectors, which includes applications of immersive technology. DIGITAL's investment areas are driven by demand and hype cycles. For example, during the pandemic, DIGITAL focused on healthcare-related investments. DIGITAL co-invests to mitigate risk in innovative projects. AR and VR have been a large part of many of their successful companies in DIGITAL. DIGITAL is membership based, paid by organisations working with DIGITAL. Every project that receives funding from DIGITAL subscribes to a membership fee which covers DIGITAL's overheads. Alongside funding initiatives, DIGITAL also runs a talent wing which focuses on closing the digital skills gap.



Funding by DIGITAL is non-dilutive and includes support with IP and public relations. Up to 60% of project costs are covered with the other 40% covered by the organisation or a private funder. The goal is to de-risk investment in R&D.

Success for DIGITAL is measured by the creation of full-time jobs, follow-on investment (i.e. after the grant, VC funding is received), and successful collaborations that support growth, scaling and IP generation that stays in Canada. Like many national funding programmes, DIGITAL's investment guidelines require IP to stay in Canada and for companies to maintain a national presence, to keep success in Canada.

In 2018, DIGITAL's initiatives were nationally focused, however a cluster of organisations now include international work and collaborations. To reflect the shift in focus from national to international the name "Global Innovation Cluster" has been assigned to indicate intention to work internationally, however this initiative is still taking shape and at a very early stage. At this stage, DIGITAL is actively looking to facilitate the development of consortia through events and talent networking opportunities.

BC Children's Hospital is part of the Provincial Health Services Authority in Vancouver, specialises in paediatric healthcare, catering to patients from birth to 16 years old, while also serving as a teaching and research institution for children's medicine. BC Children's Hospital is an early adoption of VR in healthcare, using it to alleviate pain and anxiety in young patients, primarily through distraction during procedures using readily available VR headsets and free content on YouTube or Netflix. While there is a strong desire for custom content, progress is hindered by cost. As a result, the hospital focuses on R&D activities where funding is more readily available.

Challenges around integrating VR in the hospital include staff training and concerns about diverting attention from patients. The hospital also emphasises the need for age-appropriate and ad-free VR content, and content that is suitable for patients laying down.

Despite challenges related to funding for VR content, the stability of immersive technology companies, and the rapid pace of hardware innovation, the hospital has found VR to be highly effective in pain management as evidenced in the 2017 study *Virtual Reality for Pain and Anxiety Management in Children* by Karen Arane, Amir Behoudi, and Ran D. Goldman demonstrating reduced pain activity in children undergoing procedures.

Currently, the hospital employs VR headsets with iPhone compatibility for easy adoption and cost-effectiveness, using brands like Utopia 360 and Fribrium pro. Applications range from simple surgeries to immunisations. Similar VR initiatives are in place at the SickKids Hospital in Toronto. Funding for VR initiatives at BC Children's hospital primarily comes from the hospital and donations, as well as grants from organisations like the Canadian Institute for Health Research, although securing such funding for trials with VR and healthcare is challenging due to a highly competitive funding environment.

BC Children's Hospital stakeholders did not identify regulatory or administrative barriers, however the hospital's use of VR remains in a well-being rather than a clinical context, allowing for flexibility in device and content usage without formal medical device and regulatory approval.

While efforts have been made to support staff training, no specific VR content has been developed through these initiatives. Previous collaborations with international researchers, such as those between Canadian and Japanese institutions, highlight the potential for broader research partnerships in the field of VR and healthcare, even in the face of competitive funding environments.



KITE Research Institute is a world leader in complex rehabilitation with 100 scientists dedicated to improving the lives of people living with the effects of disability, illness, and ageing. KITE is one of the principal research enterprises at the **University Health Network** (UHN), Canada's top medical research hospital with more than \$474 million (CAD) in total annual research expenditures and 1,167 principal investigators. KITE's areas of focus include prevention, restoration and independent living. KITE can provide key insights into the regulatory environment for new solutions in the Canadian healthcare ecosystem, including the clinical approval process. The KITE Research Institute is already investigating immersive technology applications. For example, their **Perception Lab** includes a stereoscopic projection display, multi-screen setup, VR headsets as well as (neuro)physiological equipment for the study of human perception and performance in virtual environments. A number of recent publications are related to visually induced motion sickness.

Interactive Ontario is dedicated to the economic and creative growth of the Interactive Digital Media (IDM) industry in Ontario. The organisation is a non-profit trade association focused on the development of interactive digital media for entertainment and educational purposes, with an emphasis on video games. With over 400 studios in the province dedicated to video game production, the emergence of XR technologies is increasingly translating to innovation and content creation in the sector.

Interactive Ontario organises education activities to support the sector, including an upcoming workshop with Meta about XR video game and application development.

Interactive Ontario noted that while the LBVR sector experienced a downturn during the COVID-19 pandemic, there are signs of recovery. The organisation's efforts primarily revolve around fostering commercial growth with a focus on employment opportunities and export potential within the industry. The website www.thelodge.com serves as a platform for disseminating news pertaining to individuals, products, events, and employment opportunities within Ontario's digital media sector.



A large, yellow, geometric sculpture of a rabbit, constructed from many flat, triangular and polygonal facets. The rabbit is shown in a seated or crouching position, facing left. The facets are arranged to create a sense of volume and form, with some facets being larger and more prominent than others. The overall effect is a stylized, low-poly representation of a rabbit. The sculpture is set against a plain white background.

Toronto Metropolitan Creative Lab: a technology-based workshop that supports creative research, scholarship, curriculum, and entrepreneurship activities across The Creative School and Zone Learning. The lab aims to disrupt and revolutionise the use of technology within creative fields by leveraging digital fabrication tools such as CNC milling, 3D printing, textile computing, AR/VR, and robotics.

Invest Durham: The priority of the Economic Development and Tourism Division of the Region of Durham (Invest Durham) is to lead, facilitate and support various investment attraction and expansion initiatives. Their goal is to create and retain jobs, and promote the region as the best place to live, work and invest. Presentations during the mission focused primarily on the organisation's work in film, TV, and interactive media.

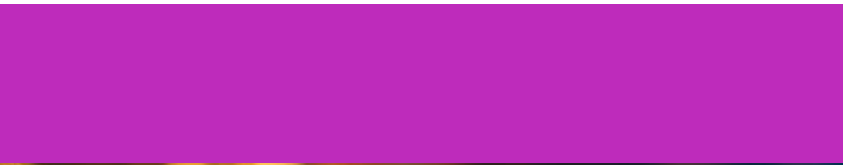
Durham Region is rapidly emerging as a prime destination for film and television production, attracting major domestic and foreign studios such as Disney, CBS, Amazon, Netflix, CBC, Apple, and MGM, which have brought notable projects like Star Trek, The Handmaid's Tale, and The Umbrella Academy to the area. Operating within the economic development and tourism sectors, initiatives like Film Durham facilitate investment and tourism by offering services such as location scouting and industry familiarisation tours to eliminate red tape and help projects get done on time.

Film Durham benefits from Durham's natural and cultural assets, its proximity to Toronto and over 600 local companies supporting the film industry. These companies include TriBro Sandy Beach Studios, a newly opened production facility with a virtual production stage, LED wall and creative spaces, as well as the William F. White Studio Backlot which is Canada's largest backlot (an outdoor area in a film studio where large exterior sets are made and some outside scenes are filmed).

Additionally, educational institutions like Durham College and Ontario Tech University provide specialised programmes and research opportunities in fields relevant to the creative industries, including VR and new media.

The Greater Toronto Area (GTA) in Ontario specifically hosts 38% of Canada's business headquarters. It is the second largest financial centre, third largest tech sector, and second largest ICT talent pool. Advanced manufacturing within the region is very strong.

Each region in Canada has a body like Invest Durham which can be a valuable point of contact when approaching the Canadian market.



National Film Board of Canada (NFB) is a public producer and distributor of Canadian content, a talent incubator and a showcase for the country's filmmakers and artists. It plays a key role in preserving historical material in Canada and digitising it. The NFB is also a key driver of Canada's audio-visual industry and creative economy. The organisation produces or co-produces more than 50 works every year, from documentaries to animated films and interactive and immersive works. To date it has produced more than 14,000 works, 6,000 of which are available free of charge on nfb.ca. NFB productions have won more than 7,000 awards, including 12 Oscars. The NFB has over 14 thousand works in their vaults, and complete one production per week across eight studios in eight cities. The NFB also has an education department which reaches 4M+ students across Canada with content to help teachers use their films as a tool to educate youth. Alongside diversity and accessibility, the NFB's initiative includes using technology as the service of art to enhance storytelling.

The NFB established its digital centre in 2009 to enhance accessibility to archives and explore new mediums.

The NFB collaborates extensively with international partners, including public institutions like ARTE and France TV, which comprises 80% of their co-productions. While discussions with organisations like the BBC have occurred, compatibility issues, such as language requirements made it challenging to align.

Notably, the NFB operates as a producer, hiring creative talent as needed for projects, with KPIs outlined beforehand. Present areas of focus include AI, data, and haptics exploration, often in collaboration with universities. While VR has proven highly engaging for audiences, the NFB typically allocates 20% of its production budget to immersive projects, encompassing installations, immersive experiences, and gaming, predominantly in documentary rather than fictional content. They leverage local studios or international partners' facilities for production needs, adapting to the requirements of each project accordingly.



Ontario Creates is an agency of the provincial government which catalyses economic development, investment and collaboration in Ontario's creative industries including the music, book, magazine, film, television and interactive digital media sectors, both domestically and internationally. Ontario Creates is committed to delivering high-impact support that creates jobs and economic opportunities for Ontarians and contributes to an advantageous business environment for growth.

Through targeted programmes and services, support for innovation focusing on providing studio space and production facilities, and by leveraging public and private partnerships, Ontario Creates builds the capacity and competitiveness of the Province's creative industries to deliver award-winning content that is enjoyed by audiences across Ontario and around the world. Ontario Creates has 15 trade and investment offices around the world, focusing on attracting investment and trade.

The interactive digital media sector alone contributes significantly to Ontario's economy, generating \$4.7 billion (CAD) in provincial GDP in 2020, with \$1.25 billion (CAD) in exports of creative content. The organisation administers the Interactive Digital Media Fund, supporting both linear and non-linear projects and offering opportunities for Ontario-based producers to create cutting-edge interactive content.

While primarily catering to Ontario businesses, partnership-based opportunities are also available. Notable projects supported by Ontario Creates include Spacewalk VR by Omniverse Media, Holy City, Versus VR (currently in development), and Biinaagami AR. These projects have garnered international recognition, being featured at various conferences and festivals focused on screen-based media.

Additionally, Ontario Creates plays a vital role in aiding LBVR establishments in their post-COVID recovery efforts, assisting them in regaining stability and momentum in the industry.

Ontario Creates invited the following leading companies in the immersive sector in Ontario to present alongside them:

1. D&D Skunkworks

Specialising in XR innovation spanning entertainment and educational training, D&D Skunkworks has a strong background in gaming and mobile development. Their journey into XR was prompted by demand when a prominent Canadian pharmaceutical company sought an XR experience for the DK1 headset. Collaborating with Gravity Industries (human flight system), a UK-based company, D&D Skunkworks have crafted a custom 6DOF motion system simulator supported through CanExport, initially targeting entertainment in LBVR settings with plans to expand into training and simulations as jet packs enter the commercial market.

Notable projects include C3VR's emergency driving decision-making simulator and *Freakout*, a VR Dance Rhythm Game.

Additionally, D&D Skunkworks has created an interactive haptic LBVR gaming experience for Major League Baseball. Distribution agreements for the project are signed with Creative Works in North America and VAR Live in the Pacific region, alongside manufacturing agreements with VAR Live, makers of the NBA VR cabinet, all supported through CanExport Innovation. D&D Skunkworks actively seek partnership opportunities for distribution, LBVR, development, and project-based funding, leveraging their expertise to drive innovation and growth in the XR landscape.





2. AVARA

AVARA creates social impact-based experiences, harnessing AR to raise awareness and action around environmental issues. AVARA's extensive work with museums and exhibitions includes immersive experiences like the life-scale animated AR representation of the last Northern White Rhino in Sudan. AVARA have also developed Biinaagami AR, ten AR experiences about preserving the Great Lakes. The experience was made in close collaboration with First Nations people in Canada. The initiative aims to educate and inspire, with plans to distribute the content to 27,000 teachers and licence it for exhibitions worldwide. AVARA is keen to distribute their IP in Europe and licence their technology for creating AR experiences.

3. Dark Slope

Specialising in immersive entertainment, Dark Slope Studios creates immersive games, TV content, and offers virtual production services. Their immersive activities include games (owned or co-owned IP) and development services, providing studio support for other companies. Dark Slope also runs an accelerator programme to support talent who are not familiar with immersive technology through access to hardware and software. The outcome of the accelerator is a prototype. After the accelerator, prototypes are frequently developed in a co-production between the creator and Dark Slope. One of Dark Slope's spin-offs is Blue Meadow which offers training and simulation for defence purposes.

Dark Slope Studios is also evolving their use of artificial intelligence in VR for entertainment purposes.

4. Stitch Media

This indie studio specialises in crafting immersive, story-driven games across VR, console, and PC. Notably, they have developed around 30 experiences tailored for the healthcare industry, including crisis management simulations to enhance healthcare practitioner soft skills. Uniquely, Stitch Media creates Asymmetric Gamers, where one player engages in XR while the other interacts via a flat screen, facilitating multiplayer experiences and enabling those without VR equipment to join in with friends who do. Every project undertaken by Stitch Media has been in collaboration with universities and supported by grant funding.

5. Sinn Studio

Headquartered in Toronto, Sinn Studio launched in 2017 as an XR video game developer and publisher. While bootstrapping at first, the studio gradually expanded its workforce to encompass more than 30 individuals and transitioned into a venture-backed enterprise with IP and underlying technology specifically advancing full body interactive mechanisms in VR.

Swordsman, a realistic sword fighting VR video game developed by Sinn Studio is a top-selling title on PlayStation VR, Meta, and Pico, surpassing established franchises like Assassin's Creed VR and Star Wars VR.

Sinn Studio incentivises user movement in VR, offering primarily combat-oriented gaming experiences. Sinn Studio is a Meta, PlayStation and Bytedance partner studio,

Leveraging insights from a user base exceeding 70,000 monthly active users, the company employs data sampling techniques to predict and anticipate user movements, leveraging neural networks to enhance combat entertainment experiences. Anticipating significant growth in competitive play within the XR landscape, the company aims to establish itself as a leader in the combat gaming sector, driven by a combination of proprietary IP and technological innovations.

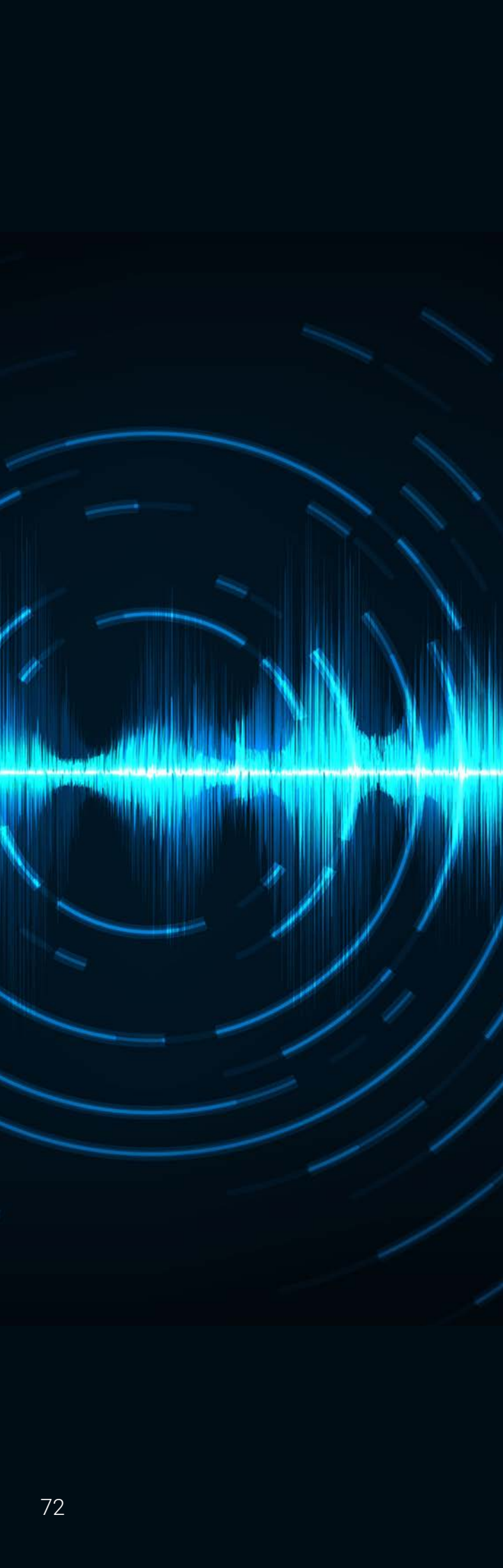
6. Secret Location

Secret Location takes immersive content out of VR into physical spaces to be collective viewing experiences. Collective viewing experiences feature visuals projected on the walls of a venue, giving the impression of being immersed in a digital environment.

Secret Location's services encompass both distribution and content creation. During the GEM, the delegation visited Illuminarium, a venue featuring Secret Location's IP in Toronto's Distillery District.

Currently, the company has five experiences in production, spanning from arcade-style games to interactive digital installations. Their collective viewing experience *Lie Brite: Worlds of Wonder* has already been licensed to locations in Toronto, Las Vegas, and Atlanta. Inspired by a popular toy dating back to the 1970s, this experience features interactive games projected onto floors and walls, designed to appeal to children and adults with accessible interactive and responsive gameplay. The company is actively adapting a touring kit to ensure it can adapt IP to various spaces and venues to extend the reach of their immersive content offerings.





Private Sector

Vaudeville Sound Group creates sound design and mixing for scripted, unscripted, commercial, immersive, digital and film. Their studio features Dolby Atmos mix facilities, and also has headquarters in London and Los Angeles. Previous immersive audio work includes sound design for the AR exhibition Ultimate Dinosaurs XR. Vaudeville Sound Group Vancouver studio is pushing immersive audio. They recently partnered with Google on an open-source initiative called Immersive Audio Model and Formats (IMAF) which will be available to the immersive sector. In Vancouver, Vaudeville Sound Group works closely with game developers, simulators, and manufacturers. The company has just two employees in Canada, three in the UK and two in Culver City alongside a network of 100 mixers and sound designers.



Clirio is an app suite spanning mobile devices, PCs, and XR headsets for instantly capturing, sharing, reviewing, and resolving worksite observations, issues, and updates. They primarily work on large scale engineering and resource development projects, creating digital twins for worksite inspection, documentation and 3D collaboration. In Canada, a lot of their work comes from land reclamation projects (returning disturbed land to a usable state, for example oil and natural gas production sites), including work with the Canadian government to help communities and regulatory bodies to understand the scale and scope of land reclamation projects. Clirio uses iOS, Microsoft HoloLens, and Quest 2 for their applications.

Kreis Immersive creates VR content as well as virtual and physical spaces for immersive experiences such as hybrid (live and digital) events. They have strong international collaborations with festivals such as Cannes XR and Forum des Images, as well as collaborate with organisations such as SIGGRAPH where they curate and produce SIGGRAPH's VR theatre.



The Frontier Collective is a non-profit organisation and innovation hub building an inclusive and sustainable ecosystem of innovation in British Columbia. The Frontier Collective is a coalition of leaders in tech, culture, and community driving the development and support of emerging and immersive technologies. The organisation promotes the region's tech industry on the world stage, grows investment and infrastructure for early-stage companies, and attracts diverse talent to Vancouver. The Frontier Collective was launched in 2022, and is funded by government grants, industry, and philanthropists.

As discussed in the challenges section of this report, the Frontier Collective stressed the challenge of retaining talent and later stage companies in Canada as many companies, once initially supported by Canadian public funding, tend to leave Canada for international investment opportunities and talent. To mitigate this challenge, the Frontier Collective actively drives VC investment and partnerships in BC. This includes trade missions and matchmaking. In 2023, the Frontier Collective brought \$500 million (CAD) investment into the local ecosystem. The next point of action identified is to create local acceleration programmes to support later stage companies in the province.

To address the challenge of a lack of a physical infrastructure or innovation hub in Vancouver, they are in early-stage conversations to build a local innovation labs space to support start-ups with access to immersive technology, as well as provide a forum for collaborations and community development. Also noted during this meeting is industry siloing. The labs space would bring together stakeholders from across industries, stimulating more efficient innovation through knowledge sharing.

PHI Centre: The PHI Foundation for Contemporary Art, a non-profit organisation founded in 2007, is dedicated to making contemporary art accessible to everyone by bringing impactful experiences to the public in order to break down preconceptions about what contemporary art is and who it is for. Phoebe Greenberg, who established the PHI Center in Montreal, is interested in the exchange between the artist and the audience, which is why the space is an exhibit as well as production space. The centre will soon expand to a new heritage building and a new building being constructed over the next few years. The current space will become a prototyping, R&D, production space, with some presentation space.

The PHI Centre is comprised of three sub-organisations:

1. The Foundation: its philanthropic arm.
2. The Center: an exhibition and prototyping space designed to reach the public, and support the arts. It needs to break even through commercial activities.
3. The Studio: generates revenue to support the centre's philanthropic arm.

Operational activities at the PHI Centre are covered by revenue or a donation by Phoebe, while the institution also receives grant funding for projects as well as tax credits. The PHI Centre sees projected experiences (collective viewing experiences where the audience stands in a room and experiences immersion through projections onto a venue's walls) as central to tapping into large distribution models capable of reaching thousands of visitors per day, tapping into their network of 30-40 performing arts centres in the US.

The PHI Centre's project feasibility checklist can be applied to UK companies creating similar immersive experiences:

- Is it sustainable?
- What are the costs?
- How many staff are required?
- What are the production costs?
- What are the venue costs?
- What are the marketing costs?
- What is the breakeven point?

The PHI Centre is known as a local testbed in Montreal, a city with an established audience for immersive experiences. The PHI Center knows the local market well and can deploy in Montreal prior to exporting IP internationally. Summer 2024 will see the second run for *The Infinite* in Montreal, with early ticket sales data indicating a number of repeat customers.

The presentation for the PHI Centre also mentioned the **ONASSIS Foundation**, which supports the distribution of VR experiences (i.e. Carne y Arena).



Space Explorers: The Infinite is an excellent case study of a successful LBVR created by PHI Centre in collaboration with Felix and Paul Studios. *The Infinite* is a unique immersive experience where visitors explore 360 video captured on the ISS, learning more about the daily life of astronauts and witnessing stunning views of Earth. The project was funded by private funding, using PHI Center's extensive experience modelling P&L (profit and loss) for touring exhibitions.

Alongside its IP, the PHI Centre is developing custom software named Synapse for LBVR operations, encompassing audience and headset management, critical for the financial viability of experiences like *The Infinite*, which requires selling approximately 35,000 tickets during a four-month tour to break even.

Initially designed to support staff with limited technological expertise, Synapse has evolved into a comprehensive tool streamlining VR headset deployment and management for exhibitions. It enables real-time status checks, device comparisons, and spatial simulations, optimising performance and adaptability while minimising on-site IT requirements. All data collected is leveraged to improve operational efficiency, with future plans including analysing audience distribution heatmaps to enhance experiences through AI-informed insights. While there's an intention to explore licensing this software to other companies, no such agreements have been made yet.

Zooming out, *The Infinite* is likely the largest scale immersive LBVR and the most successful consumer deployment of VR within the events and entertainment space. Scaled presentation enables large throughput (operating 200 headsets on site), with a touring model that meets the most effective needs of the audience base in each city. To date, *The Infinite* has proven to be a profitable deployment, creating income for the creators and producers.

PHI Center noted that one of their challenges with *The Infinite* is the 5 -7% occurrence of issues with the VR headsets, whereas audiences expect perfect deployment.



Felix and Paul Studios creates immersive entertainment experiences (VR, AR and MR) for audiences worldwide. The studio's leadership has a background in film, and have used the film industry's model to shape co-production partnerships. At the beginning of setting up Felix and Paul, the CEO used the film industry model to create content and licence the IP to Meta and other games stores. Retaining the IP was crucial, as it enabled financing from venture capital to scale the studio on a foundation of IP and technology. Funding also came from the CMF and the French National Centre of Cinema (CNC).

While Felix and Paul Studios have not previously collaborated with UK studios, they are keen to explore synergies. Currently, Felix and Paul Studios are prioritising the development of IP, which they can sell and licence, alongside technological innovations. Following *The Infinite*, the studio will create a new space experience using 360 content captured on the moon in 2026, which will be integrated into an LBVR. While a number of industries approached Felix and Paul Studios for content, the studio decided to focus on entertainment applications to focus their resources and talent and drive success.



Felix and Paul's lowest production budget was presented as \$500K (CAD) for short-form or long-form pieces. The ISS production budget was \$1.2 million. The studio has started production for the next LBVR space project with a development timeline of 14 months. It is a 1-hour LBVR where the audience awakes from cryogenic sleep and explores a spaceship. Felix and Paul are working with NASA to ensure the experience is scientifically accurate and educational, as well as entertaining.

A challenge the studio experiences is shaping partnerships with other studios on technical R&D and innovations. By the time the relationship is shaped, and funding received, the technology and market has already moved on. This challenge was echoed by UK delegates.

Felix and Paul also noted the average ticket price for experiences is higher in North America in comparison to Europe (people are not willing to pay as much for tickets). They note the UK market has a little more flexibility where the audience pays a bit more for tickets. Therefore, the market is more mature in North America and the UK than Europe in terms of willingness to pay.

7Fingers Studio

7Fingers studio tells stories using death-defying acrobatics with a life-affirming theatricality that is unique to The 7Fingers. Since its inception, the company has expanded from its own signature touring shows to create diverse theatrical experiences: original productions varying from intimate one-man shows to large-scale arena performances, Broadway musicals, artistic collaborations with renowned international artists and companies, production design and direction, special events, Olympic ceremonies, televised performances, fashion, art and music events, immersive experiences and much more. 7Fingers Studio already has several productions that have been distributed in the UK and internationally, including musicals, theatre productions, and immersive multimedia interactive exhibitions in science centres and museums.

In 2018, The 7 Fingers opened their very own Centre of Creation and Production. Situated in the heart of Montreal's downtown theatre district, the new centre houses all of the company's activities, departments and dreams under one roof with 60,000 square feet spread across seven floors, and two terraces.

7Fingers Studio is exploring international collaborations and funding opportunities to co-produce new content and IP which they can commercially exploit via their large touring network.

PIXOMONDO

PIXOMONDO stands out as a top-tier VFX and Virtual Production studio, leading the industry in expertise, workflows, and commercial success. Their established workflows and onset operations are seamless and efficient, supported by the latest technical equipment. PIXOMONDO have a number of custom bespoke lighting and synchronisation implementations in Unreal Engine (a game engine used for virtual production), which they use regularly. PIXOMONDO has had Star Trek as a continuous client at one of their Toronto stages for almost a year.



07. Collaboration Opportunities

Canada and the UK share many similarities which make the two countries well placed to work together, including language and culture similarities, immersive technology market strengths and weakness compatibility, as well as national and local funding opportunities supporting innovation.

Delegates expressed that, rather than compete with Canada, it would be more beneficial to collaborate with Canada to enable UK companies to have a pathway to the US, and for Canadian companies to have a pathway to Europe.

In this framework, the GEM identified a number of opportunities for collaboration between organisations from the UK and Canada.



Immersive Technology Incubators

The following incubators expressed openness to collaboration with the UK during the GEM:

ZÚ is an incubator initiated by Guy Laliberté in 2018. ZÚ offers programmes for start-ups, open innovation services for SMEs and large companies, expertise in financing, including privileged access to a venture capital fund, a local and international network of over a hundred renowned mentors, a unique creative hub in downtown Montreal that brings together state-of-the-art tools and laboratories, business hosting services, and spaces dedicated to research and experimentation with the general public, all under one roof.

La Piscine is a non-profit organisation, founded in 2025, dedicated to supporting cultural and creative entrepreneurs in their growth and development via programmes, workspaces, tailored event programming and innovation services.

CDL is a non-profit organisation that delivers an objectives-based programme for massively scalable, seed-stage, science and technology-based companies. CDL operates 20 programme streams, including advanced therapies, digital societies, health, AI and manufacturing, which may be suitable for UK immersive technology companies to participate in as a soft-landing into the Canadian ecosystem, with a strong network of international mentors and inventors who are actively involved in the programme. CDL has a UK presence, highlighting the Canadian understanding of the positive benefits of UK/ Canada collaborations.





Co-Production

CMF facilitates both majority and minority co-productions, with funding determined by the Canadian share of the budget. For television productions, adherence to international co-production treaties and certification by Telefilm Canada as an official co-production are mandatory. In the category of digital media, funding eligibility is assessed on a case-by-case basis. The Co-Producer Directory provides a resource for identifying potential partners from a comprehensive list of over 100 international and Canadian producers, streamlining the co-production process and fostering collaboration within the industry. Any international producer can add themselves to the list.



In 2020, a UK-Canada **Immersive Exchange** took place, supporting six XR projects. UK partners included the Arts Council of England, StoryFutures Academy, UK Research and Innovation (UKRI), and the National Film and Television School. Canadian partners included the CMF, and Canada Council for the Arts. This programme outline also provides a great reference to how IP has been managed with previous co-productions.

Canadian and UK stakeholders expressed an interest in developing future iterations of this programme.



The CMF has previously collaborated with **Medienboard Berlin-Brandenburg (MBB)** in Berlin, an organisation that is the first point of contact for the film and media industry in the Berlin region and promotes films, series and new media. MBB and CMF are **jointly funding** German-Canadian co-developments and productions in terms of digital content. Projects eligible for submission: games, VR/AR/XR experiences, multi-platform projects and web series.

Similar co-production incentives have been shaped between the CMF and:

- **Northern Ireland Screen**
- **Film Fund Luxembourg**
- **Charente Le Departement** (France)
- **Nouvelle Aquitaine** (France)
- **National Film and Video Foundation South Africa**

Potential co-production partners must note the following when seeking co-production opportunities with CMF:

- new policy has been established which states the primary producer must retain at least 20% control of the final content produced
- the CMF funds only Canadian content and IP, however this definition is currently in discussion
- the CMF has a long view, asking where the industry is going 3-5 years from now, and how they can support its development



Ontario Creates

Co-production opportunities with international partners, and international content/IP licensing that foster these initiatives could open the door to bi-lateral programming and funding. For example, a pilot or R&D project that is created and co-owned by a Canadian and UK immersive technology company which stimulates job creation and innovation in both countries, with the goal of exporting IP and technology to the US and European market provides a great pathway to achieving a mutual success outcome.

The National Film Board of Canada

The NFB would like to meet with international partners to support filling funding gaps. The UK-Canada Immersive Exchange ([see highlight box](#)) introduced in 2020 looked at the full cycle of encouraging collaboration, support, and matchmaking, all the way through production, including funding.

The challenge co-producing with UK public bodies is for the UK to find a similar co-production budget. The National Film Board of Canada has previously worked with Marshmallow Laser Feast in the UK.



Bilateral Research and Development in Immersive Technologies

Several of the organisations we met expressed interest in undertaking collaborative R&D projects with UK organisations. In general, a UK-Canada partnership could serve as a good use case to prove the viability of internationalisation for companies on both sides - Canada is a suitable gateway into North America for British companies and the UK can serve as a bridging point for doing business with Europe.

Further, UK/ Canada international partnerships are a good stepping stone to global exploitation and commercialisation of immersive technology.

Both countries have supporting funding models, so there is a great potential for bilateral R&D and early-stage company growth funding projects. **Section 5** of this report highlights specific funding opportunities for R&D in Canada.

Talent Development

The Ontario College for Art and Design is interested in industry partnerships to place their interns, supporting their student programme. An international exchange programme could benefit the UK and Canada in skill development and ecosystem awareness to strengthen ties between the two nations.

IP Development

- Canada can be a launchpad to the US market for UK immersive content and markets. While Canada does have a strong funding for content creation, it does not have globally recognisable IP
- Opportunity to leverage Canadian incentives (tax credits/ funding) for co-production where IP is equally owned, then export the IP to the UK and US market

Additional Opportunities

The UK is developing a range of foundational tools for the immersive market which companies can use to build and scale in Vancouver where a lot of content is being created. An opportunity exists for a content exchange between Canadian and UK festivals to facilitate distribution and collaboration.

The Cascadia corridor (north to south) is a major same timezone trade partner particularly benefiting the VFX industry financially but causing brain drain and steering technological development (Silicon Valley), resulting in Vancouver primarily serving as a service centre with limited intellectual property (IP). With the rise of AI potentially overtaking the VFX industry, thousands of jobs in Vancouver are at risk. There is significant potential for synergy in co-developing foundational technologies between the UK and Canada to compete directly with Silicon Valley in the live immersive experience sector, thereby diversifying the Canadian market and expanding the market opportunities for UK exports.



Guidelines for UK companies seeking to build R&D and innovation partnerships with Canadian Partners

An initial investigation phase is highly recommended before contacting a specific partner to shape a collaboration. For example, reaching out to research institutes across different sectors, such as the KITE Research Institute for healthcare, can provide valuable insights into the regulatory landscape, existing solutions, solutions under development, and industry leaders in the Canadian market.

To foster effective collaboration, the first step is to identify shared objectives and project outcomes. Establishing KPIs is essential, along with clarifying aspects like intellectual property ownership and other anticipated outcomes such as commercial expectations, revenue share and technology road mapping long term.

While international collaborations can be achieved quickly, the ideal situation is to have a long-term timeline, especially where reliance on funding is concerned, as securing funding can be a lengthy process and requires businesses to maintain viability.

A great insight from the Global Expert Mission is that each region in Canada, such as Durham Region, has a local body enacted to stimulate economic growth and tourism (i.e.. Invest Durham). These local bodies are a great resource to UK companies interested in approaching regional markets in Canada.







Common challenges

The GEM identified several challenges that are common to the UK and Canada.

Hardware

The immersive technology market is reliant on hardware to operate in almost every regard from haptics and headsets to motion capture and volumetric capture technology.

The rapid pace of innovation in software as well as hardware makes it challenging for large institutions (such as hospitals), and smaller bodies (such as start-ups and small studios) to plan for and keep up with the rate of change as hardware becomes obsolete every few years or less.

Finding long term immersive technology suppliers also has a higher risk than other more established sectors as the landscape is rapidly evolving.

In the field of R&D, a great deal of hardware being provided to researchers is already out of date, meaning that solutions receiving funding to work in immersive technology on these outdated hardware and systems are in many cases out of date even before the project commences.

In all these cases, there is a huge gap in the market for funding that supports the purchase of hardware and equipment, ensuring that research and projects undertaken have meaningful outcomes.



Access to Immersive Technology

There is limited access to stages or production spaces, and immersive technology centres which presents a huge barrier to efficient innovation and commercialisation of immersive technology solutions.

There are also very few community focused programmes which provide access to hardware and content.

In the case where multi-million dollar facilities are funded and built in the UK and Canada, incentives are misaligned after the fact, offering little motivation for the bodies (such as universities) running the centres to grant access to national immersive technology companies. This frustration was expressed strongly during the UK immersive technology roundtable sessions organised by Innovate UK.

Throughput for LBVR

The cost of hardware, physical space (i.e. a venue), and the lack of a touring/ exhibition infrastructure for LBVR makes it challenging to create experiences with high throughput that would greatly boost revenue potential.

With very few case studies other than *The Infinite*, which has proven the model of large-scale LBVR, these projects have very high risk and require additional support from funding bodies for projects beyond the pilot stage to make a meaningful market-proof point with enough data to inform the wider industry.

Cross-Disciplinary Collaboration

The UK and Canadian markets would benefit from further cross-disciplinary collaboration and knowledge exchange. While there are examples of cross-sector collaborations between immersive technology companies and other industries, cross-sector collaboration is still nascent.

Cross-industry networking and challenges with access to innovation centres would enable knowledge sharing, meaningful R&D using the latest technology, as well as stimulate innovation given that one of the biggest barriers to entry (equipment/ hardware access) is provided.

Distribution

There is no XR-specific platform for content distribution outside of XR hardware provider games stores, which can be challenging to navigate and have previously demonstrated anti-competitive behaviour. Alternatively, XR content is distributed via traditional gaming platforms such as Steam, where the audience in XR is less developed, and discoverability is a challenge.

Funding

Funding is available for pilot projects and art projects, and massively scalable ventures via the VC route, however there is a funding gap when it comes to helping companies transform a pilot project into a scalable venture ready for VC investment.

Delegates also identified a lack of funding for XR in the healthcare space. On this GEM to Canada, and on a previous Mission to the US on XR and Mental Health, healthcare institutions used very cheap and out-of-date headsets, which greatly undercuts the value of XR in this field, and presents a challenge for real impact to be made. A programme which includes both grant funding and education for recipients is highly recommended. Further, funding which matches a health provider or institution with a UK immersive technology expert and solution provider would optimise results.

Accessibility

XR user interfaces have a long way to go to be easily accessible to a wide range of demographics. There is a gap in the market for voice controlled user interfaces, as well as seamless workflow for remote collaboration, especially between teams where some people are using VR, and some are using 2D devices such as laptops or tablets.

Skills Gap

There is a skills gap for immersive technology specifically outside the creative industries such as in applications related to manufacturing, training, healthcare and simulations.





08. Barriers to Collaboration

Language Barriers

When seeking funding from public bodies in Canada, content must be available in both English and French. As an example of how this presented a barrier to collaboration, The National Film Board (NFB) of Canada attempted to collaborate with the BBC however was unable to, highlighting the incompatibility between organisations due to linguistic requirements.

IP Ownership

National funding schemes stipulate that the majority of intellectual property (IP) must remain within the country. This limits alignment for co-production and co-funding content development.

Co-development Challenges

The biggest challenge for international co-development is the pace of iteration. In most cases it takes too long to form a relationship for partners to start working together.

Managing projects also takes a lot of time so most small companies do not have capacity to do so, excluding them from what could be highly beneficial international collaborations that larger companies are able to pursue. This is a barrier to innovation.

A streamlined framework to facilitate collaboration between international partners, particularly for smaller companies lacking bandwidth (time and resources) to participate in consortium projects, would make a significant impact.

Funding Needs

Funding pools need to exceed \$50-\$100K to cover project management and organisational efforts, making the investment worthwhile and justifying engagement.

LBVR & Venue Development

LBVR initiatives require large-scale venues that are proximate to urban centres. However, there is a dearth of investors familiar with the LBVR ecosystem.

While Centre PHI have found success with touring venues and licensing models in Canada and other regions, the lack of suitable immersive venue partners in the UK presents a challenge to export Canadian content to the UK market, as well as for UK companies to enter this market in the UK despite booming demand for experiential content.

National Strategy and Collaboration Opportunities

Canada lacks a national strategy for immersive technology, leading to a fragmented landscape without a centralised point of contact. While this presents barriers to entry, it also offers opportunities for integrating UK companies into the Canadian ecosystem.

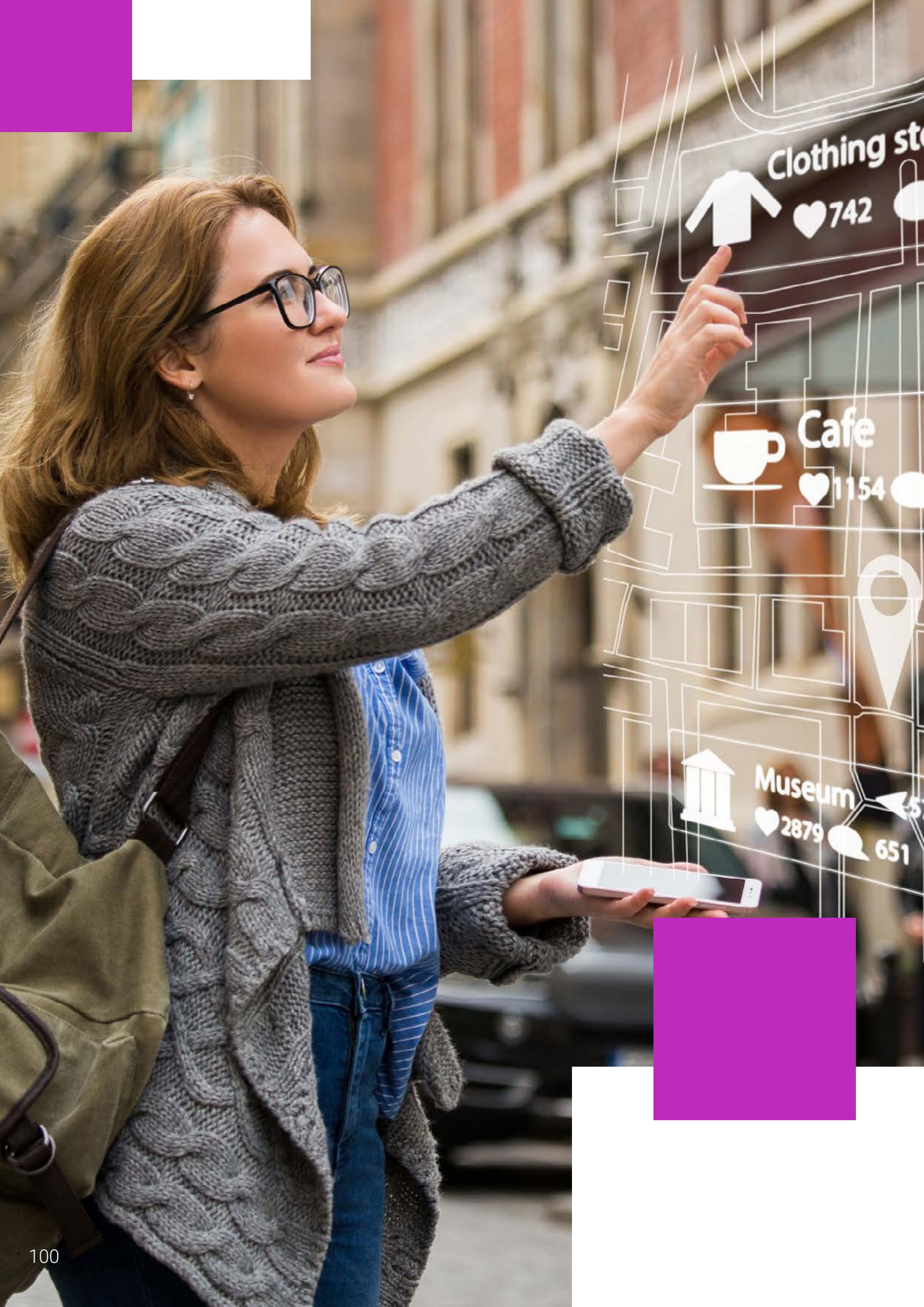
Regulatory Environment

Like the UK, the regulatory landscape for XR is based on older mediums and formats, pigeonholing immersive technology into categories that do not always align with needs or purpose. New regulations are emerging, however in both Canada and the UK, the lack of a clear regulatory environment for immersive technology presents uncertainty to stakeholders and investors and requires careful consideration.

Tax Incentives

Canadian companies have many different tax incentives available to conduct business in Canada with Canadian staff. Both Canada and the UK have extremely little room for working with foreign collaborators and subcontractors and are not incentivised to do so at the cost of losing out on highly valuable national tax incentives.





09. Conclusions

The UK and Canada share many similarities in the immersive technology space, and both have a desire to export to larger international markets such as the US and Europe. Rather than compete, delegates expressed an interest in collaborating to provide counterparts with a launchpad into foreign markets to strengthen the UK and Canada's position in the international marketplace.

The nascent immersive technology market requires additional funding to support start-ups in their massively scalable growth, with education and awareness of immersive technology in other industries being a great barrier to entry as building the business case for clients with little knowledge of XR can be time consuming. To accelerate the growth of the immersive technology market, funding and collaboration opportunities need to be annual, reliable, and robust to make a real impact.

The UK and Canada are both in the process of shaping national programmes to stimulate growth in the immersive technology sector. This is an ideal time for bi-lateral R&D programmes to be shaped, as well as exchanges and bi-lateral working groups to create aligned policy and regulations to facilitate partnerships between UK and Canadian companies, and again strengthen their position in the international marketplace.

Particularly insightful on this GEM, is learning that each region in Canada has a public body responsible for stimulating economic growth and tourism, such as Invest Durham. Public bodies such as this, as well as research centres, universities and national programmes are strong points of contact for UK companies interested in exploring the Canadian market.

One of the biggest opportunities identified as a part of this GEM is the market readiness for LBVR, however the challenge is in creating a reliable touring infrastructure for content in the UK, as well as in Canada. There is a lot of content, however distribution is still a challenge and funding opportunities are being created to catalyse this movement.

Already, actions are underway to take the learnings from this GEM and transform them into tangible outcomes. With such strong compatibility between the UK and Canada, short term goals as well as long term goals are likely to be realised much quicker than in instances with other foreign nations where there is less compatibility.

While the immersive technology market is nascent, there are passionate, well-educated and driven entrepreneurs in this space who are taking advantage of the new opportunities immersive technology presents to bring about the next big paradigm shift in our world.



10. Annex 1 – List of UK Participants

UK organisations attending the GEM were:

Advanced Manufacturing Research Centre

Arts Council England

Digitalnauts

Royal Shakespeare Company

StoryFutures Academy

XPLOR





**Innovate
UK**

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Innovate UK drives productivity and economic growth by supporting businesses to develop and realise the potential of new ideas.

We connect businesses to the partners, customers and investors that can help them turn ideas into commercially successful products and services and business growth.

We fund business and research collaborations to accelerate innovation and drive business investment into R&D. Our support is available to businesses across all economic sectors, value chains and UK regions.

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