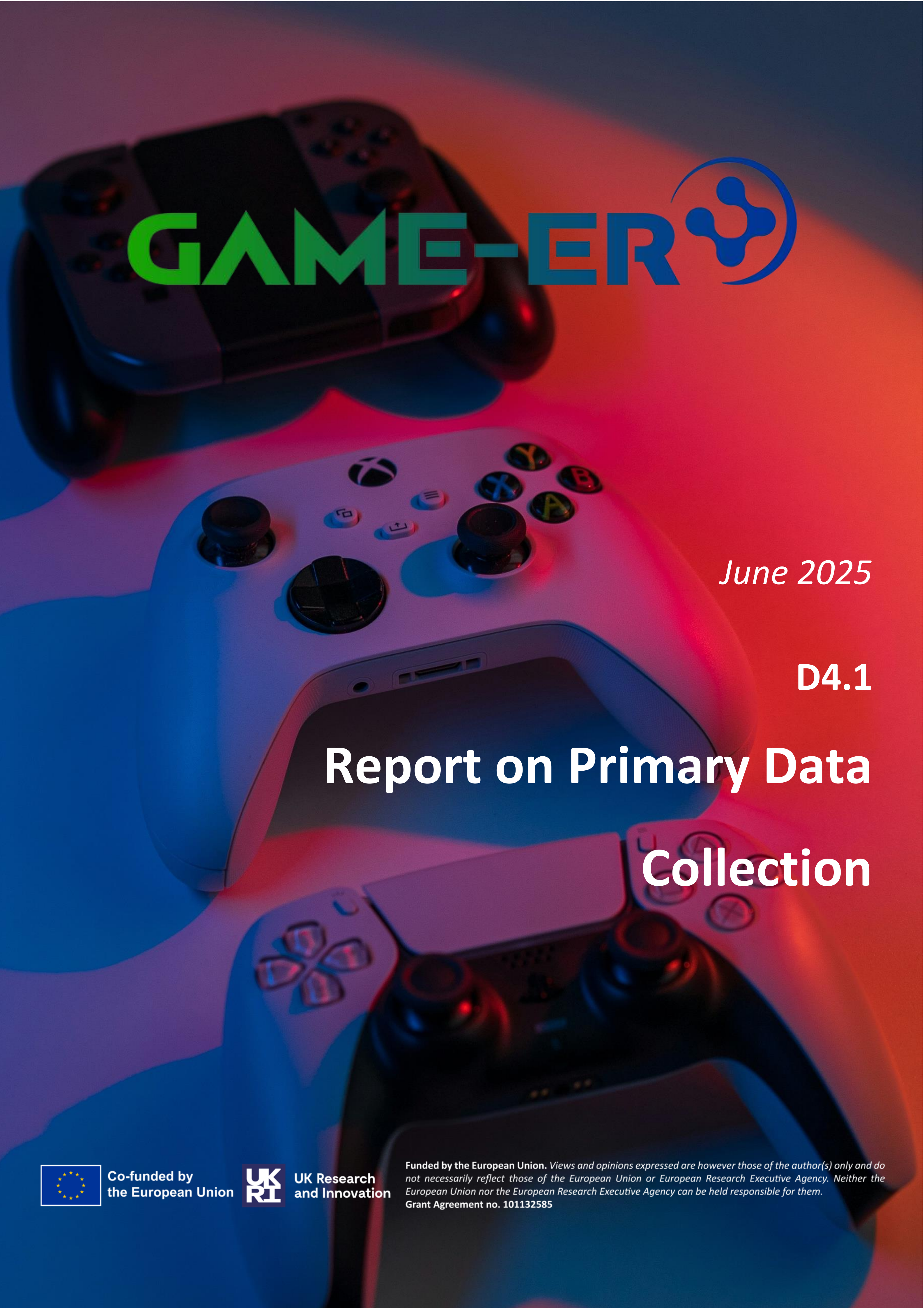

GAME-ER

June 2025

D4.1

Report on Primary Data Collection

Co-funded by the European Union

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8	PLUG AND PLAY PLATFORM SPAIN SL	PNPTC	Spain
9	KLASTER HRVATSKIH PROIZVODACA VIDEOIGARA	CGDA	Croatia
10	GAME ONLY	GO	France
11	HERNÍ KLASTR Z.S.	HK	Czechia
12	MUNICIPIO DO FUNDAO	CMF	Portugal
13	THE UNIVERSITY COURT OF ABERTAY UNIVERSITY	AU	United Kingdom

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GLOSSARY AND MAIN ABBREVIATIONS

Assurance Formation des Activités du Spectacle (Training Insurance for Performing Arts Activities, France)	**AFDAS**
skills operator for companies and employees in financial services and consultancy (France)	**ATLAS**
Business-to-Business	**B2B**

Banque publique d'investissement	**BPIFrance**
Business-to-Consumer	**B2C**
Cultural and Creative Industry	**CCI**
Communication, Dissemination and Exploitation	**CDE**
Chief Executive Officer	**CEO**
Crédit d'impôt jeu vidéo (Tax credits for videogames, France)	**CIJV**
Conservatoire National des Arts et Métiers (university of continuing education, France)	**CNAM**
Centre national du cinéma et de l'image animée (French national center for cinema)	**CNC**
Direction régionale des affaires culturelles (Regional cultural affairs departments, France)	**DRAC**
Direction régionale de l'économie, de l'emploi, du travail et des solidarités (Regional Department for the Economy, Employment, Labour and Solidarity)	**DREETS**
European Commission	**EC**
European Economic Area	**EEA**
École Européenne Supérieure de l'Image (European School of Image, France)	**EESI**
Ecole nationale des jeux vidéo et des médias interactifs numériques (French National School of Games and Interactive Digital Media)	**ENJMIN**
European Union	**EU**
French Video Game Support Fund (France)	**FAJV**
Gaming Clusters Across Multiple European Regions	**GAME-ER**
Czech Game Developers Association	**GDACZ**
General Data Protection Regulation	**GDPR**
Grand Theft Auto	**GTA**
International Game Developer Association	**IGDA**
Italian Interactive Digital Entertainment Association	**IIDEA**
Intellectual Property	**IP**
Institut universitaire technologique (French technology university)	**IUT**

South Moravian Innovation Centre	**JIC**
Kingsway Amateur Computer Club	**KACC**
Officine Grandi Riparazioni	**OGR**
Opérateur de compétences (skills operator for companies and employees, France)	**OPCO**
Plan de développement international (International Development Plan)	**PDI**
Société coopérative de production (co-op organization, France)	**SCOP**
Syndicat des éditeurs de logiciels de loisirs (French union of video game publishers)	**SELL**
Scottish Index of Multiple Deprivation	**SIMD**
Syndicat national du jeu vidéo (French national union for video game)	**SNJV**
Syndicat des travailleurs du jeu video (French union for workers of the video games industry)	**STJV**
UK Research and Innovation	**UKRI**
Video Games Tax Relief	**VGTR**
Victoria & Albert	**V&A**
Work Package	**WP**

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EXECUTIVE SUMMARY

This report presents findings from the **Gaming Clusters Across Multiple European Regions (GAME-ER)** project, specifically the findings relating to Task 4.1 “Primary data collection on clusters”. The **GAME-ER** project focuses on six case studies - Brno (Czechia), Dundee (Scotland, UK), Fundão (Portugal), Lyon and Bordeaux (France), and Turin (Italy) - each representing a unique regional context where the video game sector has developed outside the dominant capital-city ecosystems.

The **GAME-ER** research adopts a social science approach, combining qualitative, quantitative, and historical methods to explore the dynamics of cluster formation and sustainability. A central component of the methodology is a qualitative interview investigation (Task 4.1), conducted using a common semi-structured interview script developed from a shared analytical framework, to be used across the six clusters. Interviews were carried out in two stages: (i) an initial exploratory phase with key informants and first interviewees to map the local ecosystem, identify further contacts and refine the analysis grid for conducting interviews, (ii) followed by a broader round of interviews with a diverse range of stakeholders including studio founders, developers, educators, policymakers, and more. These interviews explored themes such as the origins of the cluster, local strengths and weaknesses, leadership and governance, innovation capacity, talent development, and the motivations behind company location decisions.

The interview data were analysed using thematic analysis, guided by a shared analysis grid. Later in the project, this will allow a cross-case comparison analysis in **GAME-ER** Work Package (WP) 3. This approach enabled the identification of recurring patterns such as the importance of educational institutions, the role of anchor companies, and the impact of local policy, as well as specific dynamics shaped by historical legacies, demographic trends, or economic restructuring.

The structure of the report reflects the comparative nature of the project. Each of the six chapters is dedicated to one of the regional clusters, offering a detailed account of its development trajectory, institutional landscape, and current challenges and opportunities. These chapters draw on interview data and contextual analysis to provide a comprehensive picture of each cluster’s ecosystem.

By focusing on regions often overlooked in digital innovation research, the **GAME-ER** project contributes to a better understanding of the driving forces behind the dynamism of a local video game industry and, as a result, a more inclusive understanding of where and how creative industries can succeed in Europe.

1 INTRODUCTION

1.1 Project Overview

The Gaming Clusters Across Multiple European Regions (**GAME-ER**) project aims to explore the emergence, development, and sustainability of video game clusters, with a specific focus on local and regional clusters. The project will develop a comprehensive Interactive Methodological Toolkit, featuring policy and practical recommendations designed to assist local and national policymakers in establishing or enhancing Cultural and Creative Industries (CCIs) clusters within their regions or cities. Existing research often focuses on clusters outside Europe or within major metropolitan areas like Helsinki or Hamburg. However, **GAME-ER** addresses a critical gap by studying the dynamics of smaller, regional clusters, which play a significant role in driving innovation, growth, and regional cohesion. The project's core component involves a comparative analysis of six clusters in five European countries—France, the Czech Republic, Italy, Scotland, and Portugal. These clusters were chosen for their diverse levels of maturity and unique characteristics, including concentrations of creative talent and companies. In addition to this comparative study, **GAME-ER** will conduct a Europe-wide analysis of the spatial organization of the video games industry, specifically focusing on local and regional ecosystems. This research, conducted in collaboration with policymakers and industry stakeholders, will guide the formulation of actionable recommendations using a participatory approach. **GAME-ER** brings together 15 partners from 9 countries, encompassing expertise in social sciences, humanities, policymaking, business, and innovation.

1.2 Introduction to D4.1

In recent decades, the video game industry has emerged as a significant industry and a cultural and economic driver, reshaping entertainment, technology, and creative economies in Europe and across the globe. While much of the attention on the industrial development around video games has focused on major urban centres and capital cities - often seen as the natural hubs for digital innovation and central location for economic prosperity of a country - there is less recognition that smaller, peripheral regions can also foster vibrant and sustainable ecosystems for game development. Research on these smaller hubs or clusters remains limited, overlooked in favour of studies focusing on major metropolitan or capital cities (Pilon & Tremblay, 2013; Darchen, 2016, Balland et al. 2018). As a result, the specific dynamics, challenges, and opportunities that define regional or peripheral game clusters remain underexplored. Moreover, major changes, such as the move towards digital distribution and the growing popularity of teleworking, have largely renewed the issues linked to the dynamics of industrial aggregation. This gap in the literature leaves policymakers and stakeholders in an incomplete understanding of how innovative ecosystems function outside capital cities, and what specific and tailored strategies can do to support local and regional growth and sustainability.

The **Gaming Clusters Across Multiple European Regions (GAME-ER)** project seeks to fill this gap and investigate this phenomenon by examining how video game clusters emerge, evolve, and sustain themselves in geographically and economically diverse areas across Europe. By focusing on regions and cities outside of capital cities, in a variety of situations and contexts, the project has the ambition to challenge some of the conventional assumptions about where digital innovation happens and what conditions are necessary for digital industries to emerge and succeed. At the core of **GAME-ER** is the concept of the industrial cluster: a geographic concentration of interconnected companies, institutions, and actors operating within a specific productive field (Marshall, 1920, Porter, 2000, Molina-Morales *et al*. 2012). Clusters are known as dynamic ecosystems where knowledge flows, collaboration occurs, and innovation takes place through proximity and shared culture. Clusters not only encompass companies but also other organizations and institutions such as universities or regional development agencies.

The central hypothesis guiding **GAME-ER** draws from literature on industrial districts and regional development. Scholars have argued that economic development can occur in marginal or peripheral areas when certain enabling conditions are present (Bagnasco, 1985). These may include the availability of skilled labour, the presence of entrepreneurial families with access to capital, and the emergence of networks of firms that share knowledge and resources. While much of this literature has focused on traditional manufacturing sectors, such as furniture, or shoes, the **GAME-ER** project explores these issues in the case of a highly technological and creative industry, the video games industry. In doing so, it seeks to understand whether similar mechanisms are at work, to expand the theoretical understanding of clusters, and to contribute to policy debates on regional innovation and economic diversification in Europe.

A key premise of the project is that capital cities - with their concentration of universities, investors, and cultural institutions - tend to dominate national digital economies (Saxenian, 1996; Florida, 2003, European Commission, 2026). As a result, peripheral or marginal regions often face structural disadvantages in attracting and retaining technological industries as well as talents. However, the **GAME-ER** project assumes that these regions are not merely passive recipients of broader national or European economic trends, but rather that they can actively shape their development trajectories through the adoption of creative strategies, local assets, and local institutional support. By identifying whether there are specific conditions that enable video game clusters to emerge in such contexts, the project aims to inform both academic theory and practical policymaking. Indeed, a key outcome of **GAME-ER** will be the formulation of policy recommendations based on the results of the research. This will be performed in later stages of the project both within WP3 and WP5.

GAME-ER adopts a multidimensional research design, combining qualitative, documentary, and historical methods to build a rich and comparative understanding across six cluster case studies in five European countries. Qualitative interviews with actors in the video game industry, developers, policymakers, educators, and other stakeholders will provide insight into the motivations, needs, challenges, and strategies that shape cluster development. Documentary data will offer a complementary view of the clusters' significance. Historical analysis will reveal how past industrial legacies, and other transformations influence contemporary dynamics. This multi-method approach - performed by **Work Package 4** of **GAME-ER** - will enable the project in collecting detailed evidence on each of the six project clusters individually, laying the ground for a comprehensive comparative analysis that will later identify common patterns and distinctive regional dynamics. The comparative analysis is the focus of the **GAME-ER** WP3 and the basis for the formulation of policy recommendations.

The **GAME-ER** six case studies represent a diverse cross-section of European regions, each with its own history, challenges, and opportunities. Each case study offers a unique lens through which to examine the interplay of local conditions, industrial dynamics, and policy interventions.

In Italy, the project focuses on the city of **Turin** in the Piedmont Region. Once a centre of automotive manufacturing, Turin has undergone significant deindustrialisation in recent decades. Amid this economic restructuring, a small yet vibrant video game cluster has emerged. The cluster includes studios and independent developers, collectively employing over 100 professionals. The Turin case illustrates how post-industrial cities can leverage their infrastructure, creative communities, and institutional support to foster new economic sectors. In France, the project examines two regional clusters: **Lyon** in the Auvergne-Rhône-Alpes Region and **Bordeaux** in the Nouvelle-Aquitaine Region. While Paris remains the dominant centre for the French video game industry, these two cities have developed robust ecosystems anchored by the presence of historical companies. In Lyon, the legacy of Infogrames (now Atari) has seeded a network of studios and training institutions. Bordeaux, similarly, has built on its cultural capital and quality of life to attract talent and investment. These cases highlight the role of institutional continuity in cluster formation. In the United Kingdom, the focus is on **Dundee**, a small city in the northeast of Scotland. Despite its size, Dundee hosts a dynamic video game cluster that includes large companies, start-ups, and educational institutions. The city's transformation from a centre of jute manufacturing to a hub of digital creativity exemplifies the potential for economic reinvention in post-industrial regions. In Czechia, the project investigates the cluster in **Brno**, the capital of the South Moravian Region. While Prague remains the national centre for game development, Brno has developed a significant ecosystem of studios. The cluster is supported by a network of associations, educational institutions, and municipal initiatives. Brno's experience shows the importance of local governance, community building, and cross-sectoral partnerships in sustaining a creative industry cluster. Finally, in Portugal, the project turns to the rural municipality of **Fundão**, which has launched an ambitious Innovation Strategy aimed at reversing demographic and economic decline. The municipality is seeking to establish a new video game cluster under the Invest in Games initiative. Fundão's case is particularly compelling as it challenges the common-sense assumption that digital industries require urban density to flourish.

Across these diverse contexts, the **GAME-ER** project seeks to identify common patterns and differences in the development of video game clusters. In this way, the project aims to generate actionable insights for stakeholders across Europe. Moreover, the project contributes to broader debates about the future of work, regional inequality, and digital transformation. The **GAME-ER** project will examine the extent to which, and the conditions under which, potentially marginal places can become dynamic economical centres through creativity and innovation.

2 PRIMARY DATA COLLECTION ON CLUSTERS

A central component of **GAME-ER** research design is the in-depth qualitative investigation of each cluster through semi-structured interviews with key actors. This serves as a critical entry point into the institutional dynamics and trajectories of clusters. The objective of Task 4.1 is to understand how each cluster functions from the perspective of those directly involved in its development and operation. These actors include studio founders, developers, staff of local trade unions, educators, policymakers, incubator managers, and other stakeholders who play a role in shaping the local ecosystem. By engaging directly with these actors, the project aims to uncover both explicit knowledge - such as institutional arrangements and policy frameworks - and tacit knowledge, including informal networks, cultural norms, and personal motivations. This qualitative approach is well-suited to the study of clusters in peripheral or non-metropolitan areas, where much of the innovation and collaboration may occur through informal channels. Interviews allow researchers to explore how actors perceive the cluster's strengths and weaknesses, how they interpret its history and future potential, and how they navigate challenges related to growth, innovation, and sustainability.

2.1 Methodological Framework

To ensure consistency and comparability across the six cluster case studies, the interviews were conducted using a common semi-structured interview script. In each cluster specific project partners (e.g. Abertay in Dundee, University of Turin in Turin) were tasked to conduct the interviews, the analysis and/or to facilitate access to the actors to interview (e.g. Herni Cluster in Brno). Interviewing took place either in English or in the national language, depending on the context and/or the ability of the interviewees to speak in English. The interviews script was developed in WP3 (D3.1), based on a shared analysis grid that outlines the key dimensions of interest for the project. These dimensions include cluster formation, governance and leadership, innovation capacity, talent development, external partnerships, and barriers to growth, and so on.

Semi-structured interviews are a flexible and rigorous method of qualitative data collection. They involve a set of predetermined questions that guide the conversation, while also allowing space for interviewees to elaborate on topics they consider important. This balances comparability and depth: it ensures that all interviews conducted across the six clusters cover similar or the same topics, while also enabling the emergence of new insights and specific narratives. The use of a shared script across all clusters is essential for the comparative dimension of the **GAME-ER** project. At the same time, the semi-structured format allows for adaptation to local circumstances.

2.2 Interview Themes and Topics

The interview script covered a range of themes designed to capture the multifaceted nature of cluster development. These include aspects such as:

- Cluster Formation: How did the cluster emerge? What were the key events, actors, or institutions involved in its genesis?

* Strengths and Weaknesses: What are the perceived assets of the cluster (e.g., talent, infrastructure, community)? What are its main limitations or vulnerabilities?
* Leadership and Governance: Who are the formal and informal leaders within the cluster? How is coordination achieved across different actors?
* Talent and Education: How is talent developed and retained? What role do local universities or training programs play?

The full rationale for the analysis grid and the related interview script is available in D3.1 of **GAME-ER**. The themes of the **GAME-ER** analytical grid were designed to collect both factual evidence and interpretive insights about each cluster, allowing researchers to understand not only what is happening in each cluster, but also how it is understood and experienced by those involved.

2.3 Two-Stage Interview Process

The qualitative interviewing across the six project clusters was conducted in two stages, each with a distinct purpose and methodological reason.

Stage One: Exploratory Interviews: The first stage involved a limited number of exploratory interviews with key informants. The goals of this initial stage were as follows:

1. Gain an initial understanding of the cluster's structure, history, and key actors.
2. Generate a snowball sample.
3. Pilot test the interview script, allowing for some fine-tuning of the questions.

Stage Two: Expanded Interviews: The second stage involved a larger set of interviews with a diverse group of key actors. This included representatives from studios, educational institutions, public agencies, and other organisations, depending on the specificities of each cluster.

Sampling: Later in the deliverable, a chapter for each cluster will be presented. Each chapter will also present details about the sample and the interviewees. Here we present a general set of figures. Across the six clusters, a total of 160 people took part in the interview, with the breakdown shown in Table 1. Of these, 41 were females. This lower number potentially shows a known trend where females are underrepresented in digital industries.

Cluster	Nr. Of Interviewees	Of which Females
Dundee	43	13
Brno	25	7
Turin	25	4
Lyon	20	10
Bordeaux	19	2
Fundão	28	5

Table 1 – Total number of actors interviewed per cluster

2.4 Data Analysis: Thematic Coding and Comparative Synthesis

Once the interviews were completed, they were transcribed and analysed using thematic analysis, guided by the shared analysis grid developed by WP3. Thematic analysis is a method for identifying and reporting patterns (themes) within qualitative data. It involves several steps:

- Familiarisation: Reading and re-reading the transcripts to gain an overall sense of the data.
- Initial Coding: Generating initial codes that capture key features of the data.
- Themes: Grouping codes into potential themes and reviewing them for coherence.
- Refinement and Definition: Defining and naming themes and selecting illustrative quotes.

Because we worked with a shared analysis grid, the analysis strategy was to perform initial coding and then aggregate the initial codes back to the core categories of the analytical grid as themes. Therefore, we adopted an approach mixing both inductive and deductive qualitative analysis. The use of a shared analysis grid ensures later comparability. At the same time, thematic analysis allows for the emergence of unexpected insights.

2.5 Structure

The remainder of this deliverable is organised into dedicated chapters. Each chapter provides an in-depth analysis of the local context, development trajectory, and key dynamics of each cluster. Each chapter was written independently by a different partner, and such elements of the narrative, as well as some of the reporting, may differ. However, each chapter presents a common structure derived from the project's analytical grid. The order of presentation is the following:

1. Dundee (Scotland, UK) - examining a cluster rooted in education.
2. Turin (Italy) - exploring the initial transformation of a post-industrial city.
3. Brno (Czechia) - highlighting a well-connected ecosystem in a secondary city.
4. Lyon and Bordeaux (France) - analysing two historically grounded clusters outside Paris.
5. Fundão (Portugal) - investigating a rural municipality’s strategic push into digital industries.

3 THE DUNDEE CLUSTER

Dundee, Scotland's fourth largest city, situated on the north coast of the mouth of the Tay Estuary on Scotland's eastern seaboard (see Figure 1), has historically leveraged its strategic coastal position to develop into a significant hub of commerce, industry, and innovation. Its proximity to the North Sea facilitated maritime trade and access to key international markets as well as imperial influence, positioning Dundee as a cornerstone in Scotland's industrial expansion during the 18th and 19th centuries, and Scotland's link to the British Empire and Colonialism (Tomlinson, 2014). The city's population grew rapidly during this period, rising from 26,000 in 1801 to over 161,000 by 1901, driven by employment opportunities in industries like whaling, shipbuilding, canvas and linen manufacturing. Central to Dundee's industrial profile was its dominion over the jute trade. By the mid-19th century, Dundee had established itself as the world's leading centre for jute manufacturing, importing raw fibres from Bengal and producing goods for domestic and imperial markets. In the words of John MacKenzie, *"Jute manufacture expanded mightily in the 1860s and 1870s, turning the city into the great 'Juteopolis'"* (MacKenzie, 2014).

Figure 1 – Dundee in Scotland

Dundee's economic rise was entangled with the British Empire, particularly through the city's reliance on goods produced by exploitative colonial labour systems, its shipping connections to the West Indies, and its connection with the transatlantic slavery system in North America and the Caribbean (Fryer, 1984; Adogame & Lawrence, 2014). By 1911, 40% of its workforce was engaged in the jute industry, which was heavily female dominated (Tomlinson, 2014). This industrial base was complemented by the growth of the journalism and jam industries, giving rise to the city's nickname "*City of the three Js*" – jute, jam, and journalism.

In fact, Dundee emerged as a key centre of the British newspaper industry, home to one of the largest press empires in the country. This dominance was ostensibly divided between two major firms: *D.C. Thomson & Co*. and *John Leng & Co*., with the relation between both culminated in a formal merger in 1926. In addition to its publishing scale, Dundee was also a pioneer in newspaper illustration and comics. Notably, in 1880, the Dundee Advertiser became the first daily newspaper in Britain to employ a staff artist, Martin Anderson, establishing a precedent for visual journalism. The accumulation of wealth from these industries in the hands of a few families would generate stark differences in the quality of life of the higher classes, including jute barons living in immense mansions, and working-class people living in harsh and precarious conditions across the city. Despite such contradictions, Dundee became a centre of working-class labour organisation and cultural innovation, characteristics that would shape its future creative sectors.

These industries were not only sources of wealth but also fostered a culture of entrepreneurship, ingenuity, and technical excellence. In contemporary times, Dundee has undergone significant post-industrial transformation. During the 1950s and 1960s, Dundee entered a new phase as a recipient of substantial inflows of US capital as part of an effort by the UK government to revitalize the struggling economy. Multinational companies, notably National Cash Register (NCR) and Timex, were attracted to Dundee. The influx of multinational companies contributed but was short-lived. Timex would leave the city completely during the 1990s, and NCR would remain, but on a smaller scale. While the decline of traditional industries in the late 20th century resulted in economic challenges, including high unemployment and deprivation (Stewart, 2011), the city has seen a resurgence through cultural regeneration and investment in the creative economy.

The population now stands at approximately 150,000 (Scottish Government, 2022), and the city has repositioned itself as a centre of digital innovation, notably within the video games sector. In December 2014, Dundee received the designation of City of Design by UNESCO, resonating with the wide number of independent artists, designers, and creators living in the city, as well as cultural hubs such as the V&A, McManus Galleries, Dundee Contemporary Arts, Creative Dundee, the Dundee Rep and the Scottish Dance Theatre, all taking home in the city. Even so, socioeconomic struggles remain, with the 2020 Scottish Index of Multiple Deprivation (SIMD) confirming that prominent levels of poverty, social and material deprivation persist across the city (Dundee City Council, 2024). Dundee's history during most of the 20th century can be read as an era of deglobalization, in reference to the dramatic socioeconomic and industrial transitions triggered by the collapse of its global-facing industries connected to the British Empire. Then, the present-day video games cluster consolidation with its global-facing character, international investment, and insertion in global value chains can be read as a renewal or new wave of globalization for the city. It is yet to be determined how deep the impact of the video games cluster on the city itself will be.

3.1 Introduction to the research on the cluster

A pivotal aspect of the **GAME-ER** project is the investigation of the unique local characteristics of each cluster, including its historical evolution, analysis of available skills/competencies, mapping of key stakeholders, and understanding of current interactions among actors present in the cluster. This section describes the results of the case study of the Dundee cluster. To develop this task, the team implemented semi/structured qualitative interviews with relevant stakeholders. The Dundee cluster is distinguished by a rich historical heritage in video game development, marked by seminal titles such as *Lemmings* and the genesis of *Grand Theft Auto* (*GTA*). A crucial factor in its uniqueness lies in the presence of Abertay University, a Higher Education institution that established one of the first-degree programs in video game development worldwide (Sutherland, 2018), consistently feeding a pool of talent for the local industry, as well as startups created by the students themselves. This symbiosis between academia and industry has fostered a relatively cohesive community, characterised by intertwined personal and professional networks.

The Dundee cluster faces significant challenges that modulate its current and future trajectory. A concern is the difficulty in generating and commercialising new intellectual property (IP) with a global impact, mirroring its past achievements (e.g., *GTA*). This situation is exacerbated by visibility issues at the national and international levels, where the cluster's narrative is often reduced to its historical successes, overshadowing contemporary experience/expertise. Competition for talent with larger, better-funded national and international hubs, as well as perceived uncoordinated government support pose obstacles to sustained growth.

Despite these challenges, the cluster exhibits intrinsic strengths that underpin its resilience and potential. The geographical proximity and strong interpersonal connections facilitate informal collaboration, knowledge sharing, and mutual support between studios, including mentoring from established companies to start-ups. Initiatives such as *Games Talks Live, Arcadia Festival, Hubworld, DARE Academy*, and independent initiatives such as *Gamespace* seek to deepen and further strengthen this collaboration (descriptions of these initiatives are provided in the next sections). The continued presence of qualified talent from Abertay and the lower cost of living compared to other UK cities remain important attractions. Ultimately, the collective willingness of stakeholders to reinvigorate the cluster narrative and foster a more collaborative and ambitious environment, as well as the outstanding passion, technical expertise, and creativity that characterize the community, form a solid foundation for its future evolution.

3.2 Data collection and analysis

For the application of the semi-structured interviews that constitute the basis for the data presented here, a script was created based on the Analytical Grid of the **GAME-ER** project (as produced by WP3) to capture fundamental components and dynamics of the Dundee cluster. The Dundee team conducted 43 interviews (between May 2024 - January 2025), each with a duration between 60 and 75 minutes. The critical challenge for this task was generating a sampling strategy that allowed the team to grasp both the diversity of actors involved in the cluster, as well as reach sufficient depth in the kind of data collected from the interviews.

A tentative list of identified actors for the interviews was as follows: *actors in management or leadership positions from game companies of different sizes and lifespans; academics and educators from Universities and other institutions who offer formal and informal education; local policy makers; facilitators and investors; Programmers, artists, project managers and other employees from local game companies; Students from local Games development degrees; graduated students who are working for the companies of the Cluster, graduated students who have started their own studio in Dundee; regional and national level policy makers; actors from other relevant local creative industries.* The task's research design involved non-probabilistic purposeful sampling accompanied by a complementary snowball sampling for determining the interviewees. Purposeful sampling is broadly used in qualitative research to identify and select participants who constitute information-rich actors related to the phenomenon of interest due to their history, knowledge, expertise, or influence degree. In the setting of this project, the sampling technique was used to select key actors already on the research team´s radar who play or have played a critical role in the Dundee cluster. This approach was complemented with snowball sampling, starting with the first interviewees. The interviews were later analysed using NVivo. A codebook was developed based on an inductive approach to the first 12 interviews. This codebook was tested, refined, and readapted during working sessions with the team and then used to code the remaining 31 interviews. The emergent codes were grouped into themes, and the themes were mapped into the most relevant dimensions present in the **GAME-ER** Analytical Grid and the research aims of the project.

3.3 Cluster emergence & genesis

3.3.1 Local industry: Origins & historical legacy

Several pre-existing elements within Dundee laid the groundwork for the future video games cluster. One crucial factor was the city's industrial history, particularly the presence of a skilled workforce, specialized in manufacturing that required agile and precise techniques (predominantly women), and the presence of the Timex factory, which began manufacturing *ZX Spectrums*[2] during the 1980s. As a Game company leader noted, "*In some ways you can look at it as an output of Dundee's struggles post-industrialisation, you know, as a post-industrial city. So, 1980s, the Timex factory takes on a contract to manufacture ZX Spectrums after the demand for Timex watches was rapidly decreasing*" (Game company leader 4). *Timex*, known as the *Timex Corporation*, established operations in Scotland in 1946, attracted by newly introduced regional development grants aimed at revitalizing the post-World War II economy. This move came at a time when the local jute industry was already in decline, and employment opportunities were scarce. Timex began producing timepieces and later diversified into electronics. The company's Dundee facility ultimately ceased operations in 1993, but before that, it manufactured millions of *ZX Spectrums*.

This manufacturing activity led to a greater availability of these early home computers in Dundee compared to other cities. The perception was that *"probably more so than most cities in Britain at the time, there was a bit of a computer culture, because computers were existing in every corner"* (Local Policy Maker 1). This widespread access to technology, through multiple means and access points, meant that "*in a city which wasn't a particularly affluent city, almost everyone had a computer. And as soon as you get that ubiquity, where everyone has access to technology, people would start playing with it, programming it, and playing games on it*" (Academic Educator 3). This convergence of industrial capability and technological innovation helped to catalyse the emergence of a grassroots software development culture in Dundee. Local enthusiasts began writing games and distributing them through nascent fellow-supported independent networks.

Beyond access to technology, Dundee also possessed a blend of skills relevant to game development. Historically, as one of our long-term actors' interviewees mentioned, the city's identity was tied to *"jute, jam, journalism and shipping... it was very much connected to engineering and also creativity"* (Game company leader 4). Dundee has played a pivotal role in the development of journalism and mass publishing in the United Kingdom. The city became a major hub of the newspaper and magazine industry in the 19th and 20th centuries. D.C. Thomson was renowned for producing a wide range of newspapers and magazines, including The Courier, a major Scottish daily with roots dating to 1816, and The Sunday Post, one of the most widely read papers in mid-20th-century Scotland. The company also became synonymous with British comics, launching iconic titles such as *The Beano* (1938) and *The Dandy* (1937). These publications, which blended humour, satire, and social commentary, introduced generations of children to storytelling, graphic art, comics, and satire, playing a foundational role in British popular culture. It is interesting to notice how people who were studying to become comic artists and pursue that tradition in Dundee, or work in other similar fields, had the unexpected opportunity to work within the video games industry. An opportunity that was unthinkable just a generation before, as one of our interviewees describes, *"When I was about 11 or 12 years old, and home consoles started appearing, up until the time when I actually joined the industry in '93, the games industry was obviously nothing like it is today. It was a niche hobby, and quite a naughty thing to be involved with [...] And I was just fortunate enough, in that regard, that within Dundee, uniquely within Dundee, game opportunities occurred, and they needed artists. I left art college in the summer, and was asked to join this fledgling video games company at the same time, and it was a very unexpected opportunity to get paid a salaried position to do art." (Academic-Educator 4)*

Analogously, Dundee's creative heritage is closely intertwined with its educational institutions and industrial backdrop. The founding of *Duncan of Jordanstone College of Art and Design* in 1909, now part of the *University of Dundee*, laid the groundwork for a vibrant community of artists, designers, and creative thinkers. The college gained a national reputation for excellence in fine art, illustration, textiles, and digital media. All these factors meant there was an existing pool of both technical and artistic talent within the local population. The presence of *Duncan of Jordanstone College of Art & Design* alongside institutions producing technical skills like the Kingsway Technical College and the Dundee Institute of Technology (which would become Abertay University in 1994) created a fertile ground for the interdisciplinary nature of game development. Furthermore, in its post-industrial decline, Dundee offered low property prices, which encouraged a lot of investment because publishers could get more value for their money because salaries were lower, and rents were lower. This lower cost of living also made Dundee (much lower than cities like London), appealing to individuals looking to enter the creative industries.

3.3.2 Collective actions: Initiating actors & first interactions

The emergence of the Dundee cluster was significantly propelled by the actions of key individuals, their interactions, and the formal and informal relations they fostered. A pivotal moment was the decision of David Jones, a technically savvy former employee of the *Timex factory*, to start a games company under the name of *DMA Design* in 1988. The company and the connected vision were scaffolded and supported by Jones' previous participation in Computer Clubs in Dundee, particularly the *Kingsway Amateur Computer Club* (KACC), hosted at *Kingsway Technical College*. There, he met some of the key figures who would become part of DMA and would play a critical role in designing the games that would launch the company to become a world hit: Russel Kay, Mike Dailly, and Steve Hammond (Wade, 2016); Gary Timmons joined DMA in 1989 and would play a critical role in the company. During their time at the KACC, they already developed several games, continued to share their creations, and became collaborative, working towards common projects.

In 1986, David Jones accepted a voluntary redundancy from Timex, and with those resources, he bought a Commodore Amiga 1000, which was almost state-of-the-art technology at the time, and enrolled himself in the *Dundee Institute of Technology* to study Computer Science. The Institute also hosted its computer club, of which Jones and Hammond would become part. Even before launching *DMA Design* in 1987, the group would work on developing new games, porting games, and working on several projects together with both entertainment and commercial focus.[3] In 1987, Jones decided to create *DMA Design*, and later in 1989, the company would open its first offices, finalizing the transition between what Mike Dailly called "*bedroom coding*" and an institutionalized, formally administrated games company[4].

Interviewees highlighted how important Jones' initiative and vision were, as they both gathered the significant expertise that was already present in Dundee and around him, while also channelling this creativity and collaboration into a formal venture, a source of income, and a viable professional path. As one interviewee stated when asked about the igniting spark for the video games cluster, *"First of all, it needs someone who's got an idea going, 'I'm going to do this, I'm going to make a company,' and that was David Jones. I don't know what would have happened if it wasn't for him, but he was the guy who decided, 'I'm going to start a games company to make games."* (Worker from local game company 1). The subsequent success of DMA Design and its groundbreaking titles like Lemmings (1991) and the early Grand Theft Auto (1997) created a *"critical mass within Dundee where you have people leaving and creating other studios and other businesses on the back of the success of DMA" (Game Company leader 4).* Indeed, it's argued that *"almost every studio in this city could trace, somehow, their roots back to GTA or Lemmings and the studio that produced them. The impact of DMA was so profound that in Dundee, it wasn't like if they worked at DMA Design, it was like, 'When did you work at DMA Design?' Cause everybody worked – seemed to have been at the company at some point"* (Game company leader 3). This created a shared experience, a common thread, and a network within the nascent industry.

In addition, another founding actor was *Abertay University*, which, as mentioned above, became a formal University in 1994, but as its previous incarnation, the *Dundee Institute of Technology*, it was already offering relevant training in Computer Science. Recognizing the growing need for skilled personnel, Abertay University played a crucial role by launching dedicated computer games courses. In practice, this was a proactive response to the demands of the burgeoning local industry, which were connected from the get-go to the University. As one account of the interviewees recalls, when early developers realised *"there weren't enough people, we were hiring them from each other, and that only ends badly. And Abertay, at the time, was about to launch a course in virtual environments, and we were like, 'If you run a games degree, nobody in the world had run a games degree at that point. If you did that, we'd take everybody you can give us*" (Game company leader 4). Abertay's initiative would then become a significant catalyst and generate a deep impact on pathways into the industry and the availability of skilled workers for emerging companies, as well as inspiring students to create their own startups.

This close relationship between the game companies and Abertay created a direct "*talent pipeline*" feeding directly into the local game companies, and training students who would also be interested in creating their own companies. As one interviewee describes, *"A lot of the video games companies in Dundee are essentially connected to Abertay – if you look at Abertay as like a deep-sea vent, the games industry is like the bacteria that surrounds that to get the talent from the universities"*

(Worker from local game company 2). The close relationship between Abertay and the industry is further highlighted by the fact that many smaller studios were either founded by people who were here (Abertay) or employ a lot of people who studied there.

Furthermore, initiatives aimed at supporting new ventures, signposting, and fostering collaboration played a key role. Paul Durrant at Abertay established a graduate enterprise incubator called *Embryonix* in 2000, which attracted student and graduate teams looking to start game businesses. As one of our interviewees who worked in this initiative mentioned, *"quite early in that, we began to attract interest from some of the student and graduate teams who were beginning to think about setting up games businesses*" (Local Facilitator 1). This incubator helped the rise of early companies like *Digital Goldfish*, which was later acquired by Ninja Kiwi. Projects like *Dare to be Digital (*later transformed into *DARE Academy)*, a competition showcasing student game development talent along with expert mentoring, also facilitated connections between aspiring developers and the established industry. Yet, there was also another ingredient that completed the picture of the main stakeholders at the time: the role of public policy. Then *Scottish Enterprise*[5], a public company devoted to helping the private industry and startups grow and find the right opportunities, had a representative for the Games industry who played a key role in helping it grow; her name was Joyce Matthew. One of the actors with the longest trajectory within the cluster described her role and impact as follows: *"This lady, Joyce Matthew, provided that and helped new companies set up, helped persuade companies to come to Dundee to set up, or individuals to come to Dundee to set up a company. And to help the existing companies grow. And for the next 15 years or something, a lot of us would meet this lady, you know, every couple of months, and she understood the opportunities and the challenges and helped signpost the companies to grow. So, it's probably those three things, so DMA is the origin, Abertay providing the pipeline of talent, and then a bit of signposting from an individual at Scottish Enterprise that believed in the industry."* (Game company leader 3). In conclusion, the interaction of an unexpected technological foundation within a community of highly passionate and creative learners, the vision of key individuals, the strategic role of Abertay University, and a lively network of developers accompanied by the right sort of governmental support laid the groundwork for the vibrant Dundee video games cluster that exists today.

3.4 Local industry features and components

3.4.1 Perimeter of the cluster

Dundee serves as the principal regional centre for the former Tayside area and Northeast Fife, supporting an estimated catchment population of approximately 400,000 people. Although the Tayside Regional Council, which once encompassed the current local authority areas of Dundee, Perth and Kinross, and Angus, has since been dissolved, its legacy remains evident in the city's continued regional role. Geographically, the Dundee City Council area is the smallest local authority in Scotland, covering just 60 square kilometres (Dundee City Council, 2021). Dundee's video game ecosystem is primarily centred around the urban centre of the city itself, although its influence and connections extend to the surrounding region. The concentration of companies, talent, and supporting infrastructure converges in Dundee, creating a distinctive core. The two biggest educational Institutions in Dundee, the University of Dundee and Abertay University, both have programs dedicated to computer science, with Abertay specialising in games development as well as other relevant areas of digital expertise such as computer arts or cybersecurity. As one of our interviewees (Academic-Lecturer 5) points out, the city *"has a lot of students in it, it's got two Computer Science degrees and then St Andrew's University is close by, which has got a Computer Science degree as well, I think that's quite an important thing for digital companies. It's a close community, you know? So, the size of the city helps".* This proximity and the presence of educational institutions such as Abertay University, with its reputation as a European leader in video game education (Universities Scotland, 2015), act as a magnet for the activity of the sector. While there may be some companies or individuals connected to the ecosystem outside of Dundee, most of the activity is located within its urban limits, cementing the city as the epicentre of video game development in this region of Scotland.

In terms of industrial activities, the cluster encompasses a diverse spectrum ranging from independent studios and small businesses to the presence of large industry players, as well as collectives. Concerning the sort of specialization companies have, there is a wide variety of models and a mix of industrial activities; work-for-hire is present with some companies devoting part or the majority of their labour to providing development services for contractors, both from within the UK and from the international scene (see Table 2). The sorts of activities involved in the work-for-hire dimension include developing mobile as well as console, and desktop games. Some companies focus on developing their own IP, porting games among different platforms, providing technical solutions, and developing their own technologies. An example of the latter is 4J Studios' *Elements Engine*, a proprietary voxel sandbox engine launched in 2024 by the company[6].

Areas	Types
Types of games-focused organisations	Local Independent companies (large, medium and small)
	Companies belonging to external partners
	Student Startups
	Collectives
Types of activites performed	Developing new proprietary IP
	Working on free to play mobile games
	Porting games to multiple platforms
	Developing/maintaining external partner's IP
	Developing Applied Games for real world scenarios
	R&D of new technical and technological devices and practices

Table 2 – Types of organization and activities performed by companies in the Dundee cluster

This coexistence of studios of different sizes and specialization models creates a network of interdependence and informal collaboration. In addition to development studios, the ecosystem includes supporting complementary activities (figure 2) such as organizations managing industry-focused events like *Hubworld* and organizations generating cross-industry networking events like *Creative Dundee.* There are an Enterprise Centre the *Bell Street Ventures*, a *Centre for Entrepreneurship* at the *University of Dundee*, business advice and support in the form of *Business Gateway Dundee.* Moreover, there are *R+D Centres* like the *InGAME project, Abertay Competitive*

Games Lab, and *CoSTAR Realtime Lab, an E-Sports Studio in Dundee and Angus College*, the *Dundee and Tayside Techscaler* located at *Abertay's Cyberquarter*, and the presence of organizations that bring complementary professional services, like *Henderson and Loggie*, an accounting firm specialized in video game companies.

Figure 2 – Complementary services, facilities and activities in the Dundee video games cluster

Despite its internal spatial cohesion, Dundee's video games cluster also faces challenges related to its geographical location in the context of the national and global industry. The distance from major industry hubs, such as London, can lead to limitations in terms of access to networking events, investment, and attracting senior-level, experienced talent. One interviewee, who leads a local company and has ample experience in the industry, points to this reality when he mentioned that: *"geographically, it's always been a bit of a challenge here. You've got to get on a plane or a train to network with the wider industry. The Dundee hub, or even the Scottish industry, is very small, it's very insular, and if you want to get work of making a start as a young studio or as a startup, you're not going to be able to do that only directly from the local ecosystem"* (Game company leader 5). Despite the growing adoption of remote work, the need for face-to-face interaction and access to a wider labour market remain important considerations. The perception of Dundee as a small city that hosts a compact video game cluster continues to be the defining element of its perimeter.

3.4.2 Demography of companies

In terms of the number of companies and their size, the interviews suggest a predominance of small, independent studios, albeit with the significant presence of a few larger companies, some of which are long-term actors in the field. One of the interviewees who leads one of Dundee's most significant game companies describes this diverse composition when he says: *"I think it's still very good. I mean, I think you have Scopely here in the form of Tag. You have obviously Rockstar as they acquired Ruffian Games and became Rockstar North, and work in the Vision Building that we're in. And they are probably within the year to become the dominant employer in the games industry in Dundee, as they are in Edinburgh. We're 105 people, I think Tag is about 50, you've got Ninja Kiwi, who are about I think 30 or 40. Then you've got Denki, which is small. You've got 4J Studios, which isn't that large. You've got Cobra, which isn't big. And then you've got lots of smaller ones, independent and startups, and lots of emerging talent and opportunities"* (Game company leader 6). This quote illustrates the coexistence of companies of different scales, with the expectation that Rockstar North will become the dominant employer in the cluster soon. Although an exact number of companies has not been identified (and more work on this is planned for D4.2), and the lack of precise data constitutes a limitation for the cluster (see Table 3), the general perception is that of a dynamic ecosystem with a solid base of small businesses and the growing influence of larger firms.

An independent developer we interviewed (Independent Developer 1) also alludes to this composition and the abundance of emergent studios by mentioning: *"It's the fact that Abertay's here, really, there's just so many small startups that come from here and that is the legacy, I suppose".*

As earlier mentioned, in terms of business models and types of income, the interviews reveal a variety of approaches. Initially, work-for-hire seems to be a common strategy for income generation, especially for smaller studios. Doing work-for-hire involves studios being contracted by third parties, often publishers or larger studios, to develop games or game components based on their IP or requirements. One of our younger interviewees interested in starting their own games company commented: "*Before we started the company, as I was talking to all these other companies in Dundee, it was a lot of, 'We do work for hire. We do work for hire. We do work for hire,' and that's how they made their money*" (Student from local Institution 1). However, market conditions can influence the viability of this model. Another one of our interviewees, one of the most historically significant ones with a deep knowledge of the cluster's growth over time, highlighted the diversity of business models present in Dundee: "*I mean across all the companies in Dundee, there's quite a big mix. Some do mostly work for hire, there's some who do only new IP, there's some who are owned, you know, there's Rockstar Dundee, which obviously works on other Rockstar properties*" (Game company leader 3). This heterogeneity suggests an ecosystem that adapts to different market strategies, from the development of original intellectual property to the provision of services to larger companies. The mention of Rockstar Dundee, working on properties of a parent company (Rockstar), also indicates the presence of studios operating under a subsidiary model.

Historically, Dundee has been recognized as a development centre, with notable original IP creations in companies such as DMA Design. However, despite this heritage in IP creation, the current structure of many local companies leans significantly toward the " work-for-hire" model. An example is 4J Studios' work porting *Minecraft* to consoles, including the Xbox 360, PlayStation 3, and Nintendo Switch versions. Another example is Outplay Entertainment´s work with the *Subway Surfers* IP to develop a spin-off called *Subway Surfers Blast*[11]. This mixed approach, between working on externally owned IP and developing proprietary IP, is seen by some companies as a viable, and sometimes the best, way to generate revenue and keep the studio running.

The motivation behind the reliance on commissioned work lies in the challenges inherent in funding the development of first-party video games (IP). Developing original IP is inherently risky, and as several of our interviewees asserted, it can require periods of two or three years with no guarantee of financial success at the end. In this context, commissioned work provides a more predictable and ongoing source of income. Several companies in Dundee, while relying on commissioned work to survive in the short term, maintain the aspiration and passion to develop their own IP, often working on it in parallel or "in the background." It is crucial to highlight that IP ownership and publishing capacity were identified by our interviewees as the points in the value chain where the "*real value and majority of the profits*" are retained (Worker from local game company 3). The industry, in general, appears to operate under a model where large publishers and IP owners, often located outside the UK, capture most of the economic value. This concentration of value in publishing and core IP outside of the local or even national sphere is perceived as a systemic problem in the UK as acquisitions of local studios by large international corporations often result in the exodus of IP value and corporation tax from the UK (Local Facilitator 1).[12]

Regarding publishing activities, interviews confirmed that there are organizations in Dundee which publish games across various platforms, as well as organizations that wish to migrate to this position within the value chain. For example, *Firestoke* is a company that explicitly identifies as a publishing organization. A key example is *Hyper Luminal Games*. This is a company that has excelled at balancing both working on their own IP as well as performing work-for-hire activities and is interested in moving into publishing. One of our interviewees, familiar with the pursuit of the company puts it: "*definitely we're in a position now where financially we're able to make our own games with significantly reduced risk because of the services backbone is built in such a way where the profit that we make off of that can pay for large portions of the original games... the studio is constructed in such a way where the financial success of the studio is not contingent on that one title performing.*" (Game company leader 2). This suggests an evolution in business models, seeking to effectively manage risk and capture more value within the chain.

Yet, there is another position within the value chain present in Dundee, that of studios acquired by multinational companies. The acquisition of *Tag Games* by *Scopely* introduced a global publishing capability within the Dundee ecosystem, albeit as part of an external corporate structure. Like Scopely with Tag, the acquisition of *Ruffian Games* by *Take-Two* and its subsequent transformation into *Rockstar North* means that one of the major global publishing entities has a significant presence in Dundee. While its local focus may be more geared toward developing Rockstar properties, its nature as part of a larger global publisher and the mere size of its workforce impacts the cluster's dynamics. In summary, while a significant portion of Dundee's industry is dedicated to development, often through the work-for-hire model, players are seeking or engaging in publishing, and the presence of large global entities through acquisition integrates the cluster into international publishing structures. As a result, retaining the economic value derived from intellectual property and publishing within the local or national economy remains a significant challenge and a potential area for strategic intervention.

Dimensions	Figures
Company count	21 [low estimate][1]
%	Established Companies - 5% Large Scale Start-up - 20% Scale-up Companies - 15% Seed (early investment) - 5% SMEs – 30% Start-ups - 25%
Nr of Employees	262
Estimate Turnover	£ 38.698.000
Total Venture Capital Investment	£13.070.000

[1] The Scottish Games Network lists 27 companies based in Dundee

Table 3 – Dundee cluster summary (data adapted from: https://www.innovationclusters.dsit.gov.uk/)

3.4.3 Institutional support

Within Dundee's ecosystem, various sources of institutional support underpin its dynamism. These sources include specialized academic training, a developing entrepreneurial ecosystem, peripheral support of public entities, and the proactive action of various independent associations. In terms of educational support, several institutions offer Computer Science, Esports and Creative Industries, and Digital Design training in the area (*Abertay University, University of Dundee, Dundee and Angus College,* and *St. Andrews University*), as well as training in other relevant areas for the industry such as Computer Arts and Design and Digital Marketing (*Duncan of Jordanstone College of Art & Design*, and *Dundee and Angus College*). Abertay is a fundamental pillar as it provides a variety of training alternatives for new talent. At the undergraduate level, it offers the BA (Hons) *Game Design and Production* and the BA (Hons) *Computer Arts. At the postgraduate level*, Abertay offers the MProf *Games Development* and the MSc *Technical Art and Visual Effects*.

In addition to these programs throughout their studies, the students are exposed to several professional lectures, workshops, and visits from actors from the games cluster. These visits allow students to gain knowledge of the practice side of game development, as well as familiarize themselves with the companies and actors present in the cluster. These opportunities for contact, learning, and networking constitute a key aspect of their educational journey. One of our interviewees, who works in the public policy realm, underlined this importance when he stated: *"I think a lot of it is, frankly, the institution we're in right now, Abertay. That's a big part of it, the fact you've got a pipeline of people going through game development courses, that are keen to work in the industry"* (Local Policy Maker 1). In addition to academic training, Abertay actively facilitates connections with the local industry through various initiatives and events. The *DARE Academy*[13] (formerly *Dare to be Digital*) is a clear example. *DARE Academy* connects teams composed of students with mentors who are experts in the industry. The team works intensively during a short period around a video game project and receives constant feedback from mentors as well as lecturers from Abertay. A student who participated in DARE Academy and went on to turn his team's project into a games company described that *"largely through DARE Academy, I was able to meet with a lot of the local studios and get their advice and feedback on what we were doing. Which is really cool, when you have the pros coming and looking at what you're doing and giving you detailed feedback"* (Independent Developer 7).

Other initiatives from Abertay are relevant to this point. Both the annual *Abertay Digital Graduate Shows*[14] and *Professional Projects Showcase* are events in which the work of the students is highlighted and offered to the wider community for feedback and enjoyment. By inviting industry professionals to interact with students, the Abertay lecturers allow them to network and explore job opportunities. The presence of local studios, as well as well-known actors within the community, enriches the learning environment and is a support for both the students as well as for the companies looking for potential new recruits. A particular example is that of *third-year projects*, which end up in the *Professional Project Showcase*[15]*,* developed by students with mentorship from professionals in the sector during their third year of studies. These projects are an opportunity for students to consolidate multidisciplinary teams and work to produce an interactive media project with mentoring from an academic tutor and an industry expert. This tends to be very useful for students as they can test their technical skills, their communication skills, as well as perform collaborative work. As one of our interviewees who graduated from Abertay and went on to create a successful games company in the city mentioned: *"I think one of the best things for getting the connection to the industry, that I've found really helpful, was through our third-year projects, when we got those client mentorships in. I think we were really lucky, in the mentor that we had was someone who has been in the industry for quite some time, and specifically within the games industry."* (Game company leader 3). In addition, the University has been recently running an *Applied Games Showcase*[16] in which groups of students created *applied games*, which are games with purposes that extend beyond entertainment, that may involve education, training, research, and healthcare drives. The aim is to showcase students' game development skills for facing real-world problems and to tackle societal issues. Abertay University also offers business advice through *Bell Street Ventures*[17], an enterprise centre led by Simon Fraser that provides guidance, tools, and one-to-one advice for students wanting to transform an idea into an enterprise.

Another source of support for the cluster, coming from Abertay University, is that of Research projects focused on the local video games ecosystem. A relevant example of this is the InGAME (Innovation for Games and Media Enterprise) project at Abertay University which was a collaborative research and innovation initiative taking place between 2018-2024 aimed at driving growth and innovation within the UK's video games and interactive media sectors, particularly in the Tayside region. By fostering partnerships between academia and industry, InGAME sought to enhance the creative and commercial capabilities of the games industry through applied research, knowledge exchange, up-skilling of the workforce, generating new and enhanced business networks and relationships, and the development of new products and technologically driven services. According to the project's Economic Impact Report, "*it is estimated that over 10 years the initiative will generate £84.7 million GVA for the Scottish economy and support more than 175 jobs. This is expected to include around £55.3 million GVA and around 115 jobs within the Tay Cities Region.*" (InGAME, 2023). One of our interviewees mentioned that despite the impacts of the project only being fully visible in 10 years or so, there was already an interesting effect of InGAME *"bringing interesting academics and talent to the city"* (worker from local game company 5), some of whom ended up working for local video games companies. A newer Abertay-led research enterprise is *CoSTAR Realtime Lab*[18], a £9 million virtual production studio aimed at propelling research, innovation, and economic growth within Scotland's screen, gaming, immersive, and performance industries. Launched in February 2025 at Water's Edge in Dundee, with an additional facility at First Stage Studios in Edinburgh, the lab operates as part of the £75.6 million UKRI-funded CoSTAR network, which focuses on convergent screen technologies and real-time performance. The lab specializes in virtual production—a modern cinematography technique that integrates computer-generated imagery (CGI), augmented reality (AR), and motion capture to create immersive virtual sets for film, television, and gaming[19].

Regarding public support, the *UK Games Fund*[20] is an independent organization funded by the UK Government, which is based in the city and administers government grants for the games industry at a national level. This institutional presence brings access to financing for local companies at various stages, from early-stage graduate student teams to senior companies. The institution provides two types of funds: a £30,000 direct grant fund focused on prototypes (Prototype Fund), and content grants for games-for-entertainment, which vary between £50,000 and £150,000. Additionally, the institution leads two relevant initiatives: the *Tranzfuser program*, and the *Dundev* program. The *Tranzfuser program* supports UK graduates to build studios, providing space, technical feedback, and a £7,500 prize for the creation of video game IP, and getting them ready to apply for further funding. The *Dundev initiative* is a four-week hot-housing residential programme where a group of successful studio applicant teams travel to Dundee and receive office space, expert one-to-one support, accommodation, and a prize of value up to £10,000 to focus on developing their team and their game. While these programs are open for Dundee actors, they are tailored for the whole of the UK. On the UK level of public support, there is also the Video Games Tax Relief (VGTR), which is a government funding incentive that allows digital gaming businesses to claim up to 20% of their core production expenditure as long as they qualify by evidencing their culturally-British nature, and the use of goods or services provided from within the UK or European Economic Area (EEA). This framework is now being replaced by the Video Games Expenditure Credit that focuses on services and goods by UK-based companies alone.

On the business side, there is a publicly funded business support organization named *Business Gateway*, the local incarnation of a Scotland-level public service providing access to free business support services. The local *Business Gateway Dundee*, "*offers a range of support and advice to individuals looking to start a business, newly formed businesses, and existing businesses looking to grow and develop*" (Business Gateway Dundee, 2024). While the support offered through this organization is not specialized on the video games industry, it is a useful resource for games companies and individuals. They can use the multiple resources made available from the organization like access to business plan guides, one-to-one advice, market reports and more.

Nonetheless, policy intervention is not always perceived as an improvement for the cluster. Some of our interviewees noticed the danger entailed in too much tangling with the creativity involved in making video games. This is evidenced by one of our interviewees' accounts concerning the danger of policy interventions without proper understanding of the medium and the industry, *"I get really scared whenever they talk about adding policy to games, because that could completely change the way that we build stuff. Leaning on the accessibility stuff, if they say that games need to be accessible, that's such a big thing that people could misconstrue, and it would completely gate out like any of the smaller game devs.[...] So, I'm afraid that if people who don't know how things work make these decisions, or people who are passionate and think that everything should be implemented, just because it's better, but don't think of the ramifications that it will give to the devs, it could be dangerous."* (Independent Developer 1).

On the local side of things, Dundee City Council does not have at present, either a specialized funding scheme for the video games sector or a specialized video games business support service. Moreover, the relevance of the video games sector for local policy authorities seems to be very limited. This is a point of contention as this also means that the local council is not aware of the specific needs of the cluster´s stakeholders, and this has generated a breach between the cluster and the local political authorities, in the words of one of our interviewees, "*I think in the council, it's probably safe to say there's probably broadly a bit of a misunderstanding of what the sector is, and maybe to some extent, as well, they think there's a thought that it'll kind of take care of itself. Dundee, it's perpetuating, it's got a name, companies come to the city, companies get founded, people come out of the university and go to work for companies, and that sort of thing. And there's kind of a sense that it'll take care of itself, we don't quite understand it. I think some of it is born from a maybe understandable instinct not to reduce Dundee to games – to think that there's more in Dundee happening than games, which I think, you know, is understandable*." (Local Policy Maker 1). As we can interpret from the quote, the cluster´s success, in this case, is also a source of vulnerability, as policy actors take it for granted and assume that its performance is no longer reliant on, or could be substantially improved by, local policy intervention. This generates a lack of general direct awareness about local companies, what they are doing, and their needs in terms of specialized support and infrastructure, as well as organic communications between local policy actors and the cluster. Furthermore, this phenomenon is not limited to local public authorities. According to the interviews, Scotland's overall position in the UK concerning the video games sector is not sufficiently addressed, most attention seems to be put into London and other relevant areas in England. This is evidenced by the account of one of our interviewees who mentioned, "*I think there's no national body for the games industry, it's the ones in London, and really, they try, they do some stuff, but I don't think it's ever a priority, Scotland. They don't understand the ecosystem up here. I just think it needs to be seriously thought about, like, the Scottish government or UK government, well, let's just focus on Scotland. I don't think they understand games or the games industry, and then they think it's just going fine, so they don't really want to get involved with it.*" (Academic-Lecturer 5).

However, this is not a phenomenon unique to Dundee or Scotland; all over the UK, public funds have been cut, and councils struggle to cover the wide range of needs and requirements with limited resources and a limited workforce (Fransham et al. 2023). As a result, in the case of Dundee, the video games industry has fallen out of the immediate scope of priorities, yet, concerted efforts between public, private and academic actors could help address this issue, *"the councils are getting cut, cut, cut, cut, cut, and they're trying to do as best they can with what they've got. I think everyone needs to work better together to join up with a story about the city, more consistent PR, positive PR, and strategically trying to get stories into specific media outlets."* (Academic-Lecturer 5).

Finally, community support and independent initiatives play a significant role in Dundee's gaming ecosystem. Various organizations and events that foster connection and collaboration within the community are organized independently from each other. Colin Macdonald, a long-term actor in the cluster, organizes a series of events called *Games Talks Live*[27], which take place in Dundee, Edinburgh, and Glasgow. The objective of these events is to *"get the local communities together in each city, invite publishers up, invite government along and support organisations just to get everyone connected"* (Game company leader 3). This event highlights the importance of platforms for networking and knowledge sharing, which are not necessarily formal or organized by a central entity like a formal cluster. Another source of support in the city is that provided by Creative Dundee, with an approach that has evolved towards social justice. Creative Dundee is an independent organization working across the creative industries that interacts with the video game sector, facilitating collaborations and spaces for conversation across people who work in and beyond video games. As one of our interviewees who has been part of the activities mentions: *"over the years, we've done lots of things with the video game scene. And many of the, particularly, freelancers and small indie games companies really connect with us"* (Actor from the wider creative industry 1). On this note, it is worth noting that several collectives are operating in the cluster, among them Biome Collective, is an outstanding example of an independent proactive organization, providing a platform for freelancers to support each other, collaborate on projects, and organize events. A media and creativity festival called *Arcadia* is organized yearly by Mal Abbas from the Biome Collective. Another key initiative is that of *Hubworld*, an open community network for the Scottish games industry that organizes meetup events for people working in the sector. *Dundee Games Meet-up* is a bi-monthly community meet-up for everyone working in the games industry where people normally interact in an informal setting.

3.4.4 Cluster « DNA »

The Dundee video games cluster is in a particular position regarding its identity, reputation, and legacy because, although its status is iconic due to the legacy of coming from video games like Lemmings and GTA, many actors from the cluster assert that it requires a contemporary reinterpretation to reflect the current reality of the ecosystem. The DNA of the cluster could be described as characterised by openness, technical excellence, and collaboration as recurring values (See figure 3), although nuanced by the competitiveness inherent in the industry and the absence of a formal structure of collaboration like an institutionalized cluster. One of our interviewees, who has witnessed the cluster grow since its early stages, observes that *"I always found that the games industry in Dundee they were always quite open, always willing to help. Now, they're not going to give away trade secrets, but as a community, they all know one another, they get together, socialise with one another, even though they're for different companies. They're happy to share ideas with one another as long as it's not giving away trade secrets from potential games they're working on. So, I always found the games industry, particularly in Dundee, very open and very accommodating"* (Worker from local game company 3). This culture of exchange, although with strategic reservations, expresses a shared history, appreciation of the local community, and support for new players in the field. Geographical proximity fosters a dense network of tacit knowledge and informal collaboration, not only within the games industry but also with other organizations and networks from adjacent industries. An independent game designer who had experience in game hubs in other cities, described: *"I really like Dundee because it is – because it's quite a small city, it does feel like creative networks are quite connected– they have good relationships, and they're quite close, in a way that is not the same in other places. When I was in Bristol, there was a lot of creativity going on. There's the games industry, there's film and arts, and theatre and all sorts, but especially with games, it always felt like games were a bit separate from the other communities, and things were happening, but they weren't always happening together. Whereas I think, in Dundee, I get the feeling more that communities talk to each other, which, I think it's probably partly to do with the size."* (Independent Developer 4).

Taking a wider perspective, the attractiveness of the Dundee cluster is based on several pillars. The concentration of companies, particularly independent studios, means that there is significant talent present in the city, and even if one studio collapses, then there are multiple other studios that could need that talent. This is also valid from the point of view of companies who may be searching for where to establish themselves; Dundee offers highly skilled people that could be hired, already know the local industry, and have relevant networks. In the words of one independent creator working in the cluster, "*I think it's cool that there's a bunch of indie studios, because it means that like someone can – it means people can move between them, you can have that shared expertise or like if someone starts up a new company then there's talent already in the city. Like I think they're existing together – I'm sure that this isn't a particularly unusual insight, but when you have a bunch of small companies together, they do have that synergy of being able to share expertise. Or like someone loses their job at one company and they get a job at another, or a new company starts and there's already talent in the area*." (Independent Developer 2).

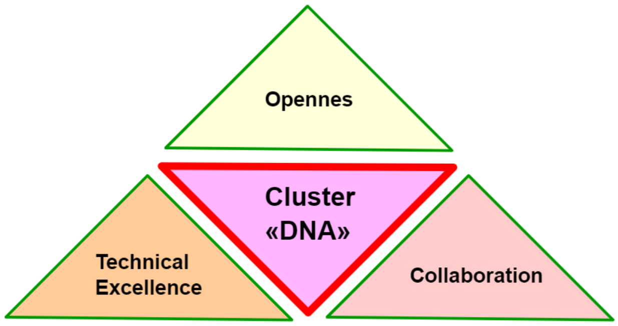

Figure 3 – The DNA of the Dundee cluster based on its recurring values

Another value is the presence of Abertay University, which occupies a central, multifaceted role within the cluster, operating as an educational institution and as a dynamic participant in shaping the ecosystem. The University´s reputation brings a lot of students to Dundee, as well as lecturers, and it is widely recognized as one of the best places to study video game-related courses in the world. One of our student interviewees said, "*It seemed to have a really good reputation. Everyone I'd spoke to and everything I read about it said that it was the best place to go for this. When I was applying to universities, I messaged a few people. I think I messaged the UKIE and the guys from Tiger, Tiger, just to say, "I'm thinking of getting into games. I'm looking at these universities. Do you have any advice?" And everyone said, "Yeah, go to Abertay."*" (Abertay graduate).

Through its pedagogical approach, the University familiarises students with the diversity and complexity of the games industry. As one student articulated, *"by having these people come in and speak to us… It also gives you an awareness that there's lots of different companies out there that you probably have never, ever heard of. And hearing about their experiences… they give us realistic elements"* (Student from local Institution 3). This deliberate exposure to the real-world conditions of the sector prepares students with grounded expectations. Moreover, Abertay provides alternative pathways into academia for industry professionals, facilitating a reciprocal exchange of expertise. One of our interviewees who had experience both as a lecturer and working in the industry, for example, described how he transitioned from games development into teaching: *"I started doing some part-time lecturing at Abertay… just started off helping out in the labs… then I* *picked up more classes… and got to a stage where that turned into a full-time post… I looked after the computer games technology course and was the programme leader… I look back on my time at Abertay very fondly… but I kind of missed development… so that kind of got me back into game development."* This permeability between sectors helps ensure that academic content remains aligned with current industry practices (Games Technical Expert 1).

In addition to its educational and connective functions, Abertay University serves as a long-standing institutional anchor within the local ecosystem. Its enduring presence has outlived many local studios, enabling it to act as a cultural and intellectual repository for the cluster. As one very experienced academic reflected, "*I think* Abertay *is the central anchor, which has outlasted many of the studios, within this area, both geographically and philosophically, Abertay outlasted any of them. You could argue that DMA has become Rockstar North, but genuinely, the most stable aspect of my career, whether I knew it or not at the time, it was Abertay. So, the accumulated expertise that it has… It genuinely is the depository of all this expertise and novelty, which in the area, and within the domain, even, it is very hard to think of a comparable institution.*" (*Academic-Educator 4*). This institutional memory provides stability and coherence to a sector often marked by rapid technological and market shifts.

In addition, the perception of Dundee as a conducive place to start game studies due to relatively lower operating costs, as noted by several of our interviewees, is a key factor. One of our interviewees who recently started his own company commented when enquired about the advantages of Dundee from the point of view of a games company, *"I'd say it's probably a good place. It's not as expensive to rent studio space as it would be if you were going to a bigger city, like Edinburgh or London. And yes, there are a lot of other cool local studios here, so it seems like it's a nice little Scottish hub of the video game industry"* (Independent Developer 7). These factors connected to the comparatively lower operational costs contribute to its attractiveness for early-stage entrepreneurs, too. The growing recognition of Dundee as a "creative hub" also contributes to its allure. Dundee is home to the V&A (Victoria & Albert) Museum, Dundee Contemporary Arts, and the McManus Galleries, along with the multiplicity of creators living in the city, and its UNESCO City of Design status has slowly cemented the emerging aura of the city as a centre for creative arts, comics and design.

In the longer-term, Dundee's heritage and reputation in the video game industry are intrinsically linked to pioneering games like *Lemmings* and the *Grand Theft Auto* franchise. These games were fundamental in positioning Dundee within the global map and were connected to both the company and the people who would constitute the basis of the cluster till the present. One of the respondents, who works in public policy at the National Level, acknowledged this historical significance: *"Dundee is one of those classic historical game making locations and if you dive into the area and start talking to people, there'll be a variety of stories as to why Dundee is good at making games. You'll probably hear the stories about people stealing consoles from manufacturing plants and this kind of thing, but there are a couple of things that have made Dundee and, more broadly, Scotland notable. They've been responsible for some of the biggest games made in the UK,* *including things like Grand Theft Auto. Which is no surprise, when a game is the biggest entertainment product in the UK, in Europe, potentially in the world*." (National Policy Maker 2).

However, there is a growing awareness of the need to update this narrative to reflect the cluster's contemporary achievements and the diversity of high-quality work that is performed across the cluster. This connects to the point mentioned in previous sections about the struggle of some companies to generate their own IPs and be able to both make them internationally visible and take a significant cut of the profits from them. A participant captured this sentiment when saying: *"I don't know, but it's weird because Dundee still sells itself on this narrative of the Lemmings and GTA... But I feel like we need to update that narrative about the city, from a video games perspective, because I'm so fed up with hearing, even as a Dundonian, I'm so fed up with the bloody Lemmings. And I think the stuff that comes from Abertay, the work that comes from Abertay, both its lecturers, researchers, students, but also the indie scene, is the exciting bit that we need to craft a narrative about, and that's what's missing"* (Actor from the wider creative industry 1). The current visibility is maintained by the presence of established studios and the emergence of new talent, although a concerted effort is required to effectively communicate the vitality and diversity of Dundee's video game ecosystem in the 21st century. While these historical touchstones provide an initial point of recognition, sustained visibility necessitates collective effort to showcase the current innovations and talent emanating from Dundee, ensuring its reputation reflects its present vitality as much as its legendary past.

3.5 Cluster evolution

3.5.1 Critical moments and phases

The **initial critical juncture, occurring in the 1980s,** was catalysed by the unexpected manufacturing of ZX Spectrum home computers, where women constituted most of the working force. This event invigorated the already existing early computer culture, providing fertile ground for collective learning and pioneering individuals such as Dave Jones, who subsequently founded **DMA Design – a first critical structuring event.** The *next phase in the early 1990s* would be marked by the early pivotal phenomenal success of titles like *Lemmings* that marked the emergence of Dundee as a significant game development place, establishing foundational know-how in innovative game design. This period also witnessed the creation of significant companies, like the current *4J Studios* (then VIS Entertainment), and companies funded by previous DMA employees like *Visual Science*. Crucially, this period also **witnessed a decision by Abertay University to introduce video game degree programmes - a second critical structuring event -** commencing the vital pipeline of talent that would underpin future growth.

The subsequent phase, *spanning the late 1990s and the 2000s*, was characterised by significant expansion and global recognition. **The evolution of DMA Design into Rockstar and the subsequent international phenomenon of the Grand Theft Auto franchise** firmly cemented Dundee's place on the global gaming map. This is a third crucial structuring event. As one of our long-term interviewees described: *"I mean we had quite a lot of investment from companies down south like Gremlin Graphics, that was small fry compared to Rockstar. You know, once Dundee was a success with*

Grand Theft Auto, that essentially solidified Dundee's position as a serious player. It kind of was our Royal Shakespeare Company performance, it was our King Lear. And at that point, everybody took Dundee very seriously." (Worker from local game company 2). This period also saw the rise of other notable studios, such as Realtime Worlds and Denki Games. Furthermore, *Dare to be Digital* emerged as a crucial mechanism for nurturing nascent talent from Abertay and guiding students towards building their own companies. *Dare to be Digital* is a video game design competition for students launched by Abertay University in 2000 and run till 2017. The objective was to help students obtain real-life work experience as a multidisciplinary team, designing games. *Dare to be Digital* was subsequently replaced by *Dare Academy* with the same objective.

A following phase, during the *late 2000s and early 2010s,* witnessed **diversification, with the growth of mobile gaming and the establishment of successful Dundee-based studios focusing on this sector, such as Tag Games and Outplay**. These are a fourth structuring event. This period also saw the fall and closure of Real Time Worlds, probably the largest Scottish video game studio at the time (with the loss of 150 jobs), illustrating the dynamic and sometimes volatile nature of the industry. Throughout this period, Abertay University's role as a consistent provider of skilled graduates became increasingly central to the cluster's sustainability and attractiveness.

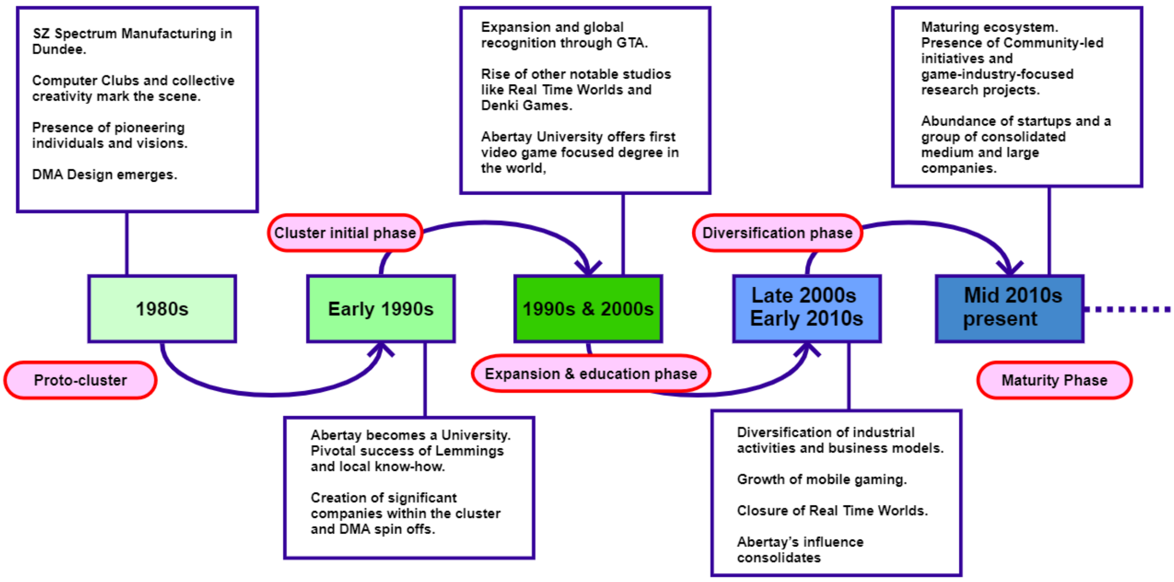

Figure 4 – Timeline of the Dundee cluster's evolution

The most recent phase, *from the mid-2010s to the present*, reflects a maturing ecosystem grappling with its legacy while striving for contemporary relevance. Community-led initiatives, game-industry-focused research projects, and a landscape shaped by lively emerging independent startups characterize this phase. Here startups are characterized by going through a volatile period before they stabilize into studios or disappear. Initiatives such as *InGAME, DunDev, Games Talks Live, Hubworld, Biome Collective*, and the more recent *Gamespace*[31] charity endeavour signify ongoing efforts to foster greater connectivity, collaboration, and growth. One of our interviewees characterized this transition with precision when explaining: *"There was a company called Realtime Worlds, which was quite dominant in Dundee for a while. And when that company went under, and there were a lot of people working there... many people thought, "Well, what's going to happen* *now?" And what happened was, yes, that company disappeared, but lots of smaller companies sprang up out of that. And that kind of just kept happening. I think part of that was that graduates from Abertay would see that it was possible to kick something off after they graduated. And see how it worked out. So that's happened over time– in the period between sort of 2009 to 2019, we saw that little explosion happen with smaller companies springing up over Dundee."* (Games Technical Expert 1).

3.5.2 Evolution curves

The initial arc witnessed a genesis rooted in a small group of pioneering companies, most notably the mentioned DMA Design, alongside Visual Sciences. This nascent phase was critically shaped by the entrepreneurial vision of individuals such as Dave Jones and the strengthening of a local computer culture. As a major stakeholder, DMA Design's impact cannot be overstated as it constitutes the big bang point from which a multitude of game companies and initiatives emerged in the city and across the UK. In the words of one of our interviewees who has witnessed the cluster grow since its inception, when asked about the impact of DMA: *"In Dundee, the industry wouldn't be here without it. In the UK, it's been seminal because it absolutely established the UK as a centre for gaming excellence. And then, the people who've travelled out of Dundee as a consequence of all this are global."* (*Academic-Educator 4*). Alongside DMA, Abertay University became a pivotal stakeholder through its decision to institute dedicated games degree programmes in the mid-1990s, a move that would shape the cluster dynamics in the long term.

The subsequent evolutionary curve was marked by substantial expansion and diversification, heavily influenced by the transformation of DMA Design into Rockstar North and the ensuing global impact of the Grand Theft Auto franchise. This era saw the establishment and eventual collapse of a significant studio such as Realtime Worlds. Simultaneously, Abertay University solidified its role as a central stakeholder, evolving its training programs´ offerings and creating new opportunities for its students. Several companies emerged from the University itself. Activities broadened to encompass a wider range of genres and platforms, and initiatives such as *Dare to be Digital* emerged as bridges for advancing new talent and the creation of independent studios. The late 2000s and early 2010s also witnessed a notable increase in mobile game development as the technological landscape worldwide was shaped by mobile phones and social networks. This moment in time saw the emergence of Abertay graduates' companies such as Hyper Luminal Games. In this respect, this stage has also coincided with a greater social and cultural diversity of people arriving in Dundee and looking to create their own studios. This is evidenced by the following statement by an actor who provides key services for video game companies in the city and has an encompassing view of how new players enter the cluster: *"Yeah, I think another obvious one is probably the university, as well. I know a lot of these cities offer courses, but from a lot of our clients that we have the managing director level person who is not from Dundee. So, there's obviously something bringing them to Dundee based on Abertay's reputation. And they come here, they go to university here, once they've finished university, they choose to stay here, so they establish their company here. There are probably more people who aren't from Dundee than are from Dundee, I think, in terms of the game* *clients that we've got, so there must be something that brings them, there's obviously something pulling them here."* (Specialist in services for Games Industry 1).

The most recent phase of evolution reflects a maturing ecosystem navigating the complexities of a globalised and rapidly transforming industry. The composition of the cluster now includes a greater number of smaller, independent studios alongside established larger entities, with Rockstar North poised to become the dominant employer in Dundee. Stakeholder engagement is expanding, with initiatives like *CO-STAR, Arcadia festival, Games Talks Live*, and independent collectives engaging with diverse actors from adjacent industries as well as among the community itself. Activities are increasingly diverse, spanning original IP creation, work-for-hire projects, and engagement with emerging technologies. However, challenges persist regarding gaining governmental support, accessing adequate infrastructure, and securing adequate investment and recognition at both local, national, and international levels.

3.6 Collective actions

3.6.1 Main activities & collective actions

A fundamental aspect of collective activity in the Dundee cluster lies in the organisation and participation in various exhibitions and promotional events. Initiatives such as *DCA's Drop in and Play* events, as well as festivals such as *Arcadia Festival* and the now-deactivated *Dare ProtoPlay*, have served as crucial platforms for both established studios and emerging developers to showcase their creations to the public and other industry professionals. Abertay University also plays a significant role in facilitating the connection between academia and industry through its DARE Academy and its graduate samples, providing mentoring, feedback, and potential recruitment opportunities. Additionally, events such as Games Talks Live, hosted by key industry players, seek to bring the local community together, including the participation of government representatives and publishers, encouraging networking and information exchange.

A considerable part of collective action manifests itself through informal networking and the exchange of knowledge and advice between studios, as well as personal ties generated by quotidian interactions or meetings at events. One aspect that differentiates Dundee from other cities with video game clusters is that the city does not have a formal cluster, as in an existing legally consolidated institution; the dynamics here operate without that type of institutionalization. The relatively small and cohesive nature of the Dundee cluster makes it easy for practitioners to get to know and support each other.

The creation of informal discussion groups and social events, such as *Hubworld* and social meetings organized by Fergus Coyne an artist and events coordinator who works in Dundee's studio *Team Terrible*, provides spaces for community members to network, share experiences, and spend time together. The initiative of *Gamespace* also aims to strengthen the community and facilitate connections between local businesses. The mobility of employees between different studios over time also contributes to the dissemination of knowledge and best practices within the cluster. From the interviews, it is evident that part of the collective actions and dynamics taking place in Dundee were deeply affected by COVID-19, the limitations in physical interaction the pandemic imposed, and the financial preoccupations of each company to weather the crisis. This is evident from one fragment from an interview with one of the emergent companies' CEO: *"I'm really keen to engage with events, I've started to engage a lot more with a few, various coalitions of studio heads, that we've started working together more. [...] I think it's really, really important to cross-pollinate between studios. I think it can be a variety of things, we've helped out other studios, for example we have a very, very talented lead artist, who has a lot of technical experience, and another studio had an issue with unreal lighting, and I was able to say, "Cool, have him for half a day." It wasn't something that we asked for money for, or anything like that, it was simply a – it's worthwhile to help out other studios, because it helps the entire city as a whole."* (Game company leader 4).

Despite these activities, as the interviewee states, there is a need for more robust and coordinated collective action in key areas such as lobbying and the definition of a unified strategy for the future of the sector. While there are nascent efforts to form a leadership group that can advocate for the cluster's interests to the Scottish government, the lack of a centralised organization and an effective lobbying strategy is perceived as a weakness compared to other creative sectors. The involvement of *Rockstar North*, Scotland's largest employer in the sector, in collective initiatives is considered fundamental but still extremely limited. The difficulty in obtaining specific funding for video game development through entities such as Creative Scotland also underscores the importance of more effective collective action to influence government policy and support.

3.6.2 Stakeholders' motivations, benefits & main contributions

The motivations for participation in collective actions within the Dundee cluster are heterogeneous and respond to the interests of each type of stakeholder. For video game studios, both established and emerging, participation in events such as exhibitions (e.g. *Arcadia, Dare ProtoPlay, games showcases*), game jams (e.g., *Global Game Jam*), and industry talks (e.g., *Games Talks Live*) offers an invaluable platform for the visibility of their products, receiving crucial feedback, and the identification of potential talent. Networking with other professionals, including representatives of other companies, investors, and publishers, is a significant benefit, facilitating knowledge sharing, exploring potential future collaborations, and access to advice and mentoring. Even for larger studios like Ninja Kiwi, sponsorship and participation in local events contribute to strengthening the overall ecosystem, from which they benefit in the long run by ensuring collective stability and well-being. While there are multiple individual ideals of growth and success, there is a common ecology ideal in the cluster. Even when not all companies aspire to become giant players in the industry, there does seem to be a common desire to have an ecology of games companies that has both a rich group of small and mid-size companies, but also larger companies having an impact internationally and growing: *"obviously you've got Rockstar, who are like the big boys, but then you've got a few studios who are kind of underneath them, who are successful and making money, like Team Terrible or Ninja Kiwi. Or even maybe a bit smaller, guys like Hyper Luminal, who have been growing steadily. It would be cool to see a few more studios getting to that level, where they have that decent level of success... then there are a few – three or four – underneath them, and then there's all the little, tiny places like us. And it would be nice to see a few more places get a couple of rungs up the ladder."* (Independent Developer 7).

For Abertay University, active participation in the cluster community, through initiatives such as *DARE Academy* and its graduate shows, allows to keep academic programs relevant to the needs of the industry, facilitate the transition of their students to the labour market, and strengthen its reputation as a leading institution in the training of video game professionals. Games community-focused initiatives like *Hubworld* seek to foster connection and a sense of community among cluster members, facilitating the informal exchange of experiences and the identification of synergies. The underlying motivation for many stakeholders lies in the conviction that a strong and connected local cluster benefits all its members. Abertay University contributes significantly by investing the time and resources of its academic and administrative staff in the organization of events, the provision of meeting spaces and facilities, and the facilitation of collaborative projects between students and industry.

Video game studios contribute their time and staff to participate in events, offer mentoring and feedback to students and startups, and, in some cases, provide financial resources through sponsorships. Individuals with industry experience, as evidenced by Colin Macdonald's hosting of Games Talks Live, often take voluntary responsibility for designing and implementing initiatives that benefit the community at large. The formation of organizations like *Gamespace* exemplifies the investment of time and volunteer effort by professionals in the sector and the business support ecosystem to address specific needs of the cluster, such as improving connectivity and cluster profile. However, it is important to note that the intensity and nature of participation and contributions can vary significantly among stakeholders. While there is widespread recognition of the benefits of collaboration and connection, the ability and willingness to actively participate may be limited by individual business priorities, availability of resources (e.g., time, staff, finances), and, in some cases, a certain reluctance to share information in an inherently competitive sector.

3.6.3 Networks & collaboration

A distinctive aspect of Dundee as a cluster is the absence of (or indeed resistance to) any strong centralising organisation. Keogh (2023) has described the history of the global games industry as a tension between informal processes (such as indie game production) and formalising processes (such as the activity of publishers and large corporate studios). Dundee can somewhat be understood as a cluster in which processes of formalisation are legible at the level of specific companies (*4J Studios, Rockstar North*), but not at the level of the ecosystem. In this sense, the cluster can be described as a multifaceted web of interconnectedness, characterised by both formal and informal linkages, and crucially reliant on many structural features that facilitate interaction. The relatively compact geographical footprint of Dundee serves as a foundational structural element, fostering a sense of nearness that inherently eases networking and the development of social relations. As one interviewee noted, *"the size of the city helps. It’s its weakness and its strength, it’s quite a connected city and it’s a connected community, most people know each other and most people within the city want to help each other" (*Academic-Lecturer 5). While a singular, dominant central actor might be absent, the University of Abertay undeniably occupies a pivotal structural position, fostering early-career social relations and potential pathways for recruitment.

The internal linkages within the Dundee cluster are characterised by a blend of formal collaborative projects and a significant reliance on informal social relations, often stemming from shared educational backgrounds and the city's close-knit nature. While formal collaborations between established studios on large-scale projects might be less prevalent due to factors such as non-disclosure agreements and competitive pressures, the interviews revealed numerous instances of smaller-scale collaborations and supportive social ties. For example, smaller companies may undertake work-for-hire for larger entities, fostering a degree of inter-firm connectivity. Large studios that are already well-positioned, as well as key actors within those studios, have actively offered guidance to younger studios. A leader of one young startup shared a story that conveys this point clearly: *"Like I mentioned, Ninja Kiwi and Team Terrible and some of the other bigger local studios that we've met through these events that we've done through Scottish Games Week, through the DCA. They've come and played our game and – you know, when someone says, "get in contact if you want advice" and you think, yeah, you're just saying that to be nice? But with these people, and it's like the next day, they'll email you, or they'll add you on Twitter, and they'll message you. [...] Seeing the people who are successful in making this happen, they want to help the next generation. Yeah, it's really cool."* (Independent Developer 7).

Events such as *Dundee Games Meet-up* serve as crucial social spaces where individuals from different companies can interact, share their work, and build relationships outside of a direct competitive context. The alumni network of Abertay University acts as a significant, albeit informal, social link, with graduates often finding employment within local studios and maintaining connections with their peers and former educators. As one interviewee articulated, graduates are *"already connected into that network. Because they know someone who was a year above them that then works for a studio, or two years above them, someone that was in their year and started their own studio"* (Games Technical Expert 1). The networking happening in and through Abertay, is of critical importance, as it may also be the source through which young studios get their first jobs in the industry, opening their path into an industry to which it can be challenging to break through. This point was plainly made by one of our interviewees who graduated from Abertay and went on to build a successful games company locally, *"so we had a really niche project, we were a really green team, we didn't have any experience, so getting that investment, or getting someone interested in that investment as a team, that we could deliver, was just tough. But because of the relationships and network that we made at Abertay, we were able to get contract work through some of the other universities, for small bodies of work that just funded us, and helped us tick over until we got some of our larger projects in, which helped us grow into a proper studio."* (Game company leader 3). These social relations contribute to a welcoming and open atmosphere within the cluster, even if formalised professional cooperation on substantial projects remains limited.

Concerning external ties, the Dundee video games cluster maintains various links to external actors, which are vital for its sustainability and growth. The most prominent external link is arguably through the talent pipeline emanating from the University of Abertay, which attracts students from across the globe, injecting new skills and perspectives into the local industry. Conversely, graduates often disperse nationally and internationally, extending the cluster's influence and network beyond Dundee's geographical boundaries. Participation in national events like *Scottish Games Week*[32], and international conferences like *GDC*[33] and *Gamescom*[34], provide opportunities for local studios to connect with publishers, investors, and other industry stakeholders from beyond the immediate region. There is a more formal connection to international actors in the form of the aforementioned work arrangements that include many Dundee-based companies working on international IP, porting games, developing games for external clients, or bought by international businesses like *Scopely* who recently acquired *TAG games*, or *Rockstar Games* who acquired the local *Ruffian Games* and retitle it *Rockstar North*.

3.6.4 Mobilized resources & competencies

A fundamental structural feature that favours the mobilisation of resources is the presence of the Abertay University which doesn't just provide a steady stream of talent but also mobilizes significant resources for facilitating connection between students and the established industry. These initiatives can take place because of the personal efforts, time, and energy investment, as well as the commitment to the well-being of the general game's ecosystem, of many Abertay's lecturers. The lecturers constitute the main and most effective point of contact for companies, as well as the most generative source for initiatives.

Equally important is the University's role as an intermediary, maintaining active and responsive connections between students and the local industry. This is often facilitated not at the institutional level, but through the individual agency of lecturers, who serve as knowledge brokers and relationship-builders. As an interviewee explained, *"I try my best by making sure that anyone that I see… is working on an area of expertise that I know a game company is interested in… I can point them towards that person and be like, 'This person, keep an eye on them'… or signposting, when they do cool stuff… or if they need kind of play testers and things, we can help organise situations"* (Academic-Lecturer 1). These informal yet strategic forms of engagement foster a healthy circulation of talent and knowledge between academia and industry.

In addition, the Dundee location of national-level organisations that channel public funds, such as the *UK Games Fund,* represents an important mobilization of human resources and financial resources. The emergence of grassroots initiatives like *Hubworld* and *Games Talks Live*, powered by voluntary contributions and the time of individuals, also demonstrates the mobilisation of competencies and voluntary efforts to foster connections. While the absence of a formal, unified industry partnership is notable, the relatable nature and shared history of Dundee's gaming community foster strong social bonds. For example, events such as the *DCA's Drop in and Play*[35] and the *Global Game Jam* mobilize both organizational resources and the voluntary participation of individuals from different companies, as well as organizations beyond the video games industry, such as *Dundee Makerspace,* a social enterprise led by creators from the city who have been involved in the *Global Game Jam* since 2015. One of the consequences of this type of dynamic based often on volunteers, is that the momentum and maintenance of networks and events, to sustain them over time, tends to fall on the shoulders of specific people and their personal initiative. As one of our interviewees who leads networking and knowledge-sharing initiatives mentioned, *"the single biggest thing is just a sense of feeling that something should happen, that if something isn't* *happening but I can see that I have the capability to do it, I kind of feel a responsibility to do it…[...] So, now what I'm trying to do is I'm trying to get things to overlap, so the reaching out to all the publishers round Europe is great for the networking events, but it also keeps me in contact with all the publishers, because I email them every six months inviting them to an event."* (Game company leader 3).

3.6.5 Coordination & control formal structures

In terms of formal structures of coordination, Abertay University emerges again as a central player, exerting considerable influence through its game development courses, the *DARE Academy* initiative, and student-focused exhibitions. These programs establish a formal framework for interaction between academia and industry, facilitating communication and the exchange of knowledge. In addition, the presence in Dundee of the *UK Games Fund*, together with its *DunDev* initiative, forms a formal hub of coordination by providing funding, mentorship, and a temporary workspace for studios across the UK.

In the area of informal coordination and control structures, the interviewees highlight the importance of social networks and personal relationships. The geographical proximity of businesses in Dundee facilitates informal face-to-face communication and the development of a sense of community. This dimension is evidenced by how one of our interviewees assesses the size of the city, the character of the industry and the relative ease to access other actors and arenas *"so I realised that, because the city's so small, there's less layers to go through to get to know people, and so if you wanted to do a cool project, there's just less people to go through. So, if you're known to do good work, people know you, so reputation spreads fast, in a good way."* (Independent Developer 5). In addition, employee mobility between companies and informal social gatherings contribute to a certain level of informal social cohesion and control, where behavioural norms and reputation can influence interactions. In this respect, the size of the city and the internal connectivity of the cluster also have an impact on the accountability to which its stakeholders are subjected. In a cluster where most actors know each other, the breaking of spoken or unspoken conventions also travels fast: *"because everybody knows everybody, so, if something does go bad, like everybody will know about it quite quickly, so it self-regulates, the fact that everybody's being watched in some way, being held accountable."* (Indie Developer 1).

Regarding values of reciprocity and solidarity, the willingness of more established studios to offer advice and pitch to newly formed or emerging start-ups exemplifies a caring for reciprocity and solidarity. Many interviewees characterized the general spirit of the cluster as helpful and open to supporting each other when needed, even by sharing work and possibilities for funding. One recent expert in the gaming sector who moved to Dundee to continue developing a career in the industry described it as follows, "I *would say my experience of it is it's a fairly helpful ecosystem here. Like, if you're a studio that was really in trouble and you reached out to the other studios and said, "Have you got work?" They would do their best to help you. [...] To have all that on our doorstep benefits all of us. It's not super-competitive. Which might surprise people if they're outside of it. It might seem like it would be, but it's not my perception. It's not my experience that it is."* (Worker from local game company 8). However, it has been pointed out that this informal cohesion does not always translate into formalised professional cooperation on a large scale across organisations, due to factors such as competition and confidentiality agreements.

Despite the existence of these formal and informal mechanisms, interviewees suggest challenges in collective coordination and control. In connection with policy realms, the lack of a formal and unified strategy at the municipal council level for the video game sector is also perceived as a limitation. Communication and collaboration with the largest organization in the cluster, Rockstar North, are identified as a difficulty, too. It is worth noting that renewed efforts are taking place in the present to generate *Scotland's National Games Strategy*, drawing from the wide pool of expertise present not only in Dundee but across other Scottish video games hubs like Edinburgh and Glasgow. This effort is also a reflection of the *Scottish Games Network*, an independent organization that aims to encompass Scotland’s interactive entertainment sector, uniting academia, industry, culture, and government[36].

3.6.6 Financial aspects

A primary challenge for the actors in the cluster is financial sustainability, particularly for the many small and medium-sized enterprises (SMEs) that make up the Dundee cluster. Many of these organizations struggle to transition from creating innovative content to robust business models and generating profitable IPs. It must be noted that several of our interviewees mentioned that their motivation to create video games was the enjoyment of the process itself, and the passion and love for video games. This is to say that profitability is not every creator’s main concern or motivation. Even so, most interviewees mentioned that a healthy cluster would allow for multiple organizations with dissimilar motivations to thrive. Reliance on work-for-hire contracts to the detriment of own-IP exploitation limits revenue potential and long-term value creation within the cluster; however, as noted in previous sections, there is an inherent risk in original IP creation, which sometimes involves self-financing, which is tamed when accompanied by work-for-hire activities. This inherent risk is augmented by an international context of recession for the industry. This is described precisely in this passage from our interviews, *“trying to get money from anyone now is like drawing blood from a stone. Trying to get a publishing deal is impossible because nobody wants to give away any money. So, I want to see that again, I guess, come back around where you do have student teams that are able to pitch for projects and get that money, and publishers will take a risk on them. Yeah, because I think otherwise you don't see anything new, you don't see anything innovative."* (Game company leader 2).

These factors tie to the hit-driven culture that dominates the global video games market, generating a setting in which it is challenging to attract investment in original IP outside of the already established franchises, and balancing creativity with revenue generation becomes a challenge, with companies dealing with the uncertainty of how their games will be welcomed internationally after investing vast energy and resources in their development, *“you are looking for the one that could go huge, stratospheric, a game, and make so much money if it goes well. And you could scale it much easier and more quickly than in any other industry. But the difficult thing is that it is very hit-driven and difficult to get to that point, there’s no formula, and it’s very subjective about, you know, what’s good and what’s not. Because most investors won’t invest in a games company unless it’s like* *technology or middleware… we know the games industry is a risk and it's hit-driven, and most investors they're thinking two out of ten games would potentially make a good return. Other investors are saying it's two out of 20 for games." (*Academic-Lecturer 5).

It is quite telling that two of the most globally visible and profitable games, on which companies based in Dundee work, are not owned by local firms. *Minecraft* and the *GTA* franchise. Neither is owned by local companies but by international conglomerates, which benefit the most from the profitability of these media products. Despite this, the presence of successful individuals, like Chris Van der Kuyle, CEO of 4J Studios, who reinvest in the local sector, represents an injection of financial capital and valuable expertise. Another common thread in the interviews was the difficulty for many student-entrepreneurs starting their own companies in transitioning from a "student-team project" mindset into a "company/management" mindset. This transition towards running a games company entails developing new skills, organizing teams in a way that allows for business management tasks to be centred on one or two people who may not be able to devote significant time to creative endeavours in the organization, thinking in terms of cost/revenues, managing human resources, among many other activities. This has led some of our interviewees to suggest that there needs to be a business education component in the training of students at Abertay University and across the other educational institutions in the city, namely that *"There should be some enterprise teaching embedded. They need to understand how the industry works, and that's not even just to start their own business; if they're going to work for a company, they have to understand that a business makes money, and that'll help them get on in their career. Those skills are very transferable, being able to pitch, being able to negotiate, all these things. So, it's a huge missing piece."* (Academic-Lecturer 5).

Access to funding and support through bodies such as *Creative Scotland* is perceived as complex and not always aligned with the specific needs of video game development, historically favouring other forms of artistic expression. While the *Video Games Tax Relief* is available, its application requires initial guidance, and the scheme starts to be relevant for medium and large-sized companies. There is an overall perception that there is a need for strategic business and entrepreneurship education across the cluster, to strengthen the diverse companies to plan and operate on the mindset of business, to facilitate the transformation of creative ideas into successes in the many platforms across which local companies focus, *"I mean just making it as easy as possible for the existing companies to do business. I think that piece about entrepreneurship is missing, trying to just instill in every new company that sets up the importance of the business side of things. It doesn't matter if you have a brilliant game idea; you've got to have a good business strategy to make that a success. So, I think whether it's the council or Scottish Enterprise, or Creative Scotland, I think it's about giving us the guidance and just trying to change that perception that people should just make a game and hope for success."* (Game company leader 3).

4 THE TURIN CLUSTER

Video games in Italy represent an important and economically significant market. At least one in three people in Italy, aged between 6 and 64, plays video games (IIDEA 2024). In parallel, the Italian video game development industry is also increasingly important and structured. In 2024, economic profits stood at between EUR 180 and 200 million, with more than 200 active companies and around 2,800 workers in the sector (*ibidem).* Many of these companies are based in cities such as Milan, Rome, Florence, Turin and Bologna. Each of these cities contains what can be called a cluster of video game production. In turn each of these clusters reflects the characteristics of the city in which it is located. For instance, in the case of Milan, the largest Italian cluster, the companies seem to be economically more structured and market-oriented; whereas, in the case of Turin, there are a number of smaller companies, which are influenced by the cultural ferment of the city – attribute visible in their productions as well. This systemic differentiation, a common trait of the country from an industrial and cultural point of view, such as in the case of its typical industrial districts scattered throughout the peninsula and highly differentiated from one another (Becattini 1998), is therefore also repeated in the case of the video game development industry. Turin is one of its most emblematic cases.

Turin, a city in northwest Italy with around 850,000 residents (Istat 2025), is the capital of Piedmont and the Metropolitan City of Turin. Nestled by the Alps and the Po River, it was Italy's first capital (1861–1865). From the late 19th century, it grew into a major industrial hub, notably with the founding of FIAT (1899) and Lancia (1906). Post-WWI, Turin became known as a 'factory town,' driven by the automotive sector. After WWII, it symbolized Italy's economic boom. Outside the manufacturing industry, a flourishing publishing industry had developed in Turin as well, with several publishing houses of national importance such as UTET, Paravia and, after World War II, Einaudi (Tranfaglia, Vittoria 2008). This sector, the first local example of the Creative and Cultural Industry (CCI), was joined by the television industry with the first national headquarters (1924) of the EIAR (Ente Italiano per le Audizioni Radiofoniche), i.e. the national radio and television public company (Grasso 1992). Finally, as early as the end of the 19th century, the national film industry was born and developed in Turin, thanks also to its proximity with France (Bertacchini 2012).

Always regarded as the industrial capital of Italy, Turin has succeeded in recent years in transforming itself on a productive and socio-economic level. It has managed to 'break free' from its historical Fordist tradition, implementing a gradual conversion of the city from an industrial to a cultural and tourist centre. This process, initiated in the 1970s and accompanied by a decade of labour conflicts (1969-1980), since the 1990s has led Turin to be considered a city with a mature development in terms of services and the tertiarisation of its manufacturing sector. At the same time, the city saw a progressive decline in the number of inhabitants *(ibidem*). Turin is also an important centre for banking and insurance, IT, film, food and wine, aerospace, industrial design, sports and fashion. The potential of the gaming industry is well represented by the long history of CCIs in its territory (Bertacchini 2012). Nevertheless, Turin is still recognised as a manufacturing city and, as emerges also from interviews, is still regarded as the 'Italian city of the automobile'.

Figure 5 – Turin in Italy

The video game production cluster in Turin absorbs and reproduces many of the specific characteristics of the city. The peculiarities of this cluster, although partially limited in terms of absolute numbers, economic impact and professional absorption/retention capacity, are of considerable relevance in defining the development trajectories of the contemporary video game industry. The heterogeneity of the industry production tends to overlap precisely with the characteristic features of the city's production systems and its socio-cultural fabric.

The Turin video game development cluster was selected for this Project due to its potential relevance at national, regional, and international levels. Its diverse actors across the production pipeline and unique operational dynamics make it a valuable case study for identifying transferable best practices. At the same time, its challenges, both internal and systemic, offer insights for comparative analysis with other European clusters. Moreover, the cluster’s influence extends beyond the local context, involving broader economic, professional, and policy networks.

4.1 Methodology, Data collection and analysis

The methodology of this work is based on the study and analysis of primary sources from the Turin cluster. The direct sources are composed of a series of semi-structured qualitative interviews with the main actors belonging to the Turin video game ecosystem (N=25). The interviews which varied in length (40-120 minutes), were all recorded, transcribed and subsequently analysed. They were all done in Italian. The concrete way of expanding the initial sample, which consisted of a few actors identified through knowledge on the part of the researchers, followed a ‘snowball’ sampling, as the different interviewees were progressively identified through network mediation and using available sources.

The subset of interviewees includes:5 CEOs of video game development companies of various sizes; employees of development companies in different roles; teachers of private professional schools; university professors; institutional representatives; members of the local acceleration programme committee (Quickload); two game designers and an editorial producer who live in Turin but also work abroad; members of the International Game Developers Association (IGDA); people of historical relevance for the cluster; people who are mixed figures between the roles mentioned above. The size of the companies interviewed varies (from medium-sized to very small); 22 interviewees live and/or work in Turin; 1 in Acqui Terme (province of Alessandria); 1 in Asti. Only four women were interviewed (a managing director, a university professor, a founder/employee of a small company, and an executive of the local Chamber of Commerce). One of the most important members of the cluster was interviewed twice. For some companies, especially smaller ones outside the core network of the cluster, it was impossible to make it to the interview: despite a lengthy mediation procedure, factors such as mistrust and irreconcilability with the other actors in the ecosystem probably prevented further relations. A study phase was also carried out through non-participant observation during some semi-formal events organised in the cluster (Tech&Tonic),[6] as well as direct and active participation in one of them (Tech&Tonic, 12 March 2025), which helped in the recognition of the actors involved in the cluster, in the understanding of the dynamics of behaviour and relations among its members, and in the mutual recognition procedure towards us, by the community active in the cluster.

The interview approach is that of 'responsive interviews', adopted to achieve a certain degree of flexibility in interview design by going into the details and direct experiences of the so-called 'conversational partners' (Rubin, Rubin 2012). The aim is to obtain a reconstruction that can reflect the interviewee's 'world' as much as possible, by modifying the question design based on the respondent and the course of the interview. The interview phase saw several moments dedicated to the identification and contact of other potential interviewees.

However, at a certain point in the identification process, a greater differentiation of the respondent pool was implemented: the research target and the subjects involved had to be broadened by also searching for companies and workers outside the main cluster network. This was the case in the last four interviews, which aimed at identifying public and private actors, the latter of smaller size, outside the cluster's main communication channels. This differentiation was necessary because the 'main cluster network', as identified during this study, is composed of an inner circle of people who have known each other for years, work together, gravitate around Officine Grandi Riparazioni (OGR),[7] and therefore created a saturation of the collected data.

The analysis of the data was performed using a thematic analysis approach, with the intention of balancing an inductive approach with a deductive one based on the project analytical grid. After an initial phase of pre-transcription re-listening without coding, to capture vivid impressions, a tentative form of 'informal' inductive open coding was done. Then, a deductive schematic first form of systematisation, linked to the Analytical Grid, was created. Coding and analysis processes were carried out using NVivo, as well as a parallel construction of a continuously updated codebook. In version 3.0, it identified: 4 themes; 36 codes (large codes); 81 sub-codes; and 34 sub-codes (specific in-depth cases). The codebook was constructed in Italian and then translated into English. About halfway through the entire process, an initial narrative summary file was created, useful for team members not directly involved in the qualitative analysis part.

4.2 The Turin Cluster Characterisation

The game development and production cluster in Turin is a small ecosystem[2], made up of small and medium-sized companies, with varying numbers of workers,[8] relatively young and mainly dedicated to indie/small-scale video game productions. The cluster also appears to lack seniority among its members. Much of the work of the companies, necessary for their survival, is done through Business-to-Business (B2B) productions with other companies in the industry (or from different sectors, like banks, schools, etc.). In the Dundee interviews this activity was referred by participants as work-for-hire. Other components of the value chain/pipeline, such as public and private educational institutions, the gaming accelerator programme, etc., are functional to the growth, development and evolution of the cluster.

Most of our respondents identified the so-called 'Year Zero' between 2013 and 2014, with the first Global Game Jam held in Turin, which occurred in January 2014. Clearly, something existed before this date, but this is the event that started the existence, at least in a structured way, of what can be defined as a 'cluster'. It is also a small cluster. This means that it is not in a strong position with respect to market position. However, at the same time, its very size and the size of its actors allow for a unique, and a buzzing (or a vibrant) CCI community, which is capable of collaboration and innovation between its members.

4.3 Cluster emergence & genesis

The video game production cluster in Turin has a short history. Its origins are currently uncertain but can be traced back to the early 2000s, at least in an atomised form of a 'proto'-cluster, composed mainly of individual local players. They almost all lived in Turin but did not work in the city area. As anticipated, a potential 'Year Zero', i.e. a starting point recognised and shared by most of the actors, can be traced back between 2013 and 2014, particularly from the organisation of the local Global Game Jam (24-26 January 2014), the first event of its kind in Turin.

The genesis of the event deserves a closer analysis: during the first half of the 2000s, most of the industry professionals who had grown up and trained in Turin were working in the most important companies of the national gaming industry – Milestone, Ovosonico (later Avantgarden), and Ubisoft, all located in Milan. Most of them, due to the high cost of living in Milan, were commuters. Some of them, between 2005 and 2006, had started to meet frequently in Turin in the evenings on their way home from work. They were joined by the future founders of 34BigThings, who had just finished their studies at the IT University of Copenhagen. With the crisis of Milestone[9] in 2012-13, a split within the company occurred, and some local workers decided to return to Turin and to found their own companies. At the end of the VIEW Conference[10] in 2013, the idea was born to do something along the lines of the Global Game Jams of northern Europe also in the city of Turin, between the T-Union association (the first association of game developers in Turin), founded by Marco Mazzaglia, and the newly created local gaming companies. The idea started with the founders of 34BigThings,

[2] For this report, extracts from interview data have been translated ad hoc from Italian to English.

based on their experience in Denmark. This event, which seemed destined to be done 'among a few acquaintances in some obscure lounge with only beers and pizzas', became an unexpected, full success: *'The three guys from 34BigThings arrived, who had the Danish experience, and one of them, Giuseppe, said "come on, why don't we organise the Game Jam?". The Global Game Jam. I said "yeah, whatever, let's organise it, but you know, we're in Nov...it's basically mid-November, the event is at the end of January, we don't have anything, it's impossible to do. But let's...let's organise, but let's do it calmly next year". "No, no, come on, let's do it now, let's try, let's try". I said whatever but, I say yes, thinking, whatever...because then he says maybe, but yeah, we'll be 25 anyway, at the most what do we do? We are 25, 30. That's us, isn't it? With all the ramshackle companies that we are, we'll get together and have fun. All right. So, after two weeks I already had the venue and the sponsorship, thanks to I3P'*[11] (MM)

In addition to being a success, this first event brought together various professionals scattered around the city/province who would otherwise have struggled to get to know each other: *'That January there, in January 2014, we have 120 registered, 120, 91 participants. I mean, people who physically were there all...we didn't want to believe it. There was a flood. But not students, okay. There was a flood of adult people working remotely in video games at the time, in 2014.' 'All Italians. That...and we had no perceptions of that. That event there raised it. I mean, it's like at some point one pulled the plug on the pool, and at some point when you take all the water out you see that there's a lot of treasure in this pool'* (MM)

It was the beginning of a video game industry reality of a 'certain level of quality', which, in the initial intentions, was to be able to dialogue with the video game industry located in Milan. In addition, it became the first action that created an initial core network of developers in Turin able to dialogue with the local institutions, both private and public, of the city.[12] This event was attended by all those who would later be present in/as the main companies of the Turin cluster. Only a few members possess a better retrospective view so far, derived from their common professional trajectory (i.e. their experience in Milan since the early 2000s). In the attempt to reconstruct the events before 2013, it emerges that the city of Turin was not a sufficient aggregative centre for the creation of a self-sustainable sector ecosystem, and the different experiences produced were unconnected to each other and extremely atomised.

4.3.1 Local industry: Origins & historical legacy

The production chain of the CCI in Turin was partly instrumental in the formation of the local video game cluster. It is composed of/shaped by all those sectors that the scientific literature identifies as propaedeutic to the emergence of video game development ecosystems. The origin of the cluster might have been driven by other contiguous sectors (cinema, art, special/visual effects, etc.), or at least have been influenced by possible inter-sectoral contaminations. However, the actors interviewed, do not recognise a sufficiently relevant shared inter-sectoral path. Therefore, a real form of continuity between these neighbouring industries and today's cluster activities seems to be (partly) excluded: *'It's very difficult because it's really two...two very different areas. And...and I can imagine them like this: we have one sector, which is the gaming sector, which is very future-oriented.*

That is, it is projected towards the future. Whereas the...the cinema sector is very much tied, clearly, to the last 100 and a few more years' (PA)

Before 2014, the experiences of the Virtuality Conference (2000) and the Lumiq Studio[13] (closed in 2013) were relevant in this respect. In 2007, the Virtuality Conference, in its eighth edition, became the current VIEW Conference. These experiences, as important as they were, failed to take sufficient root in the local video game production, partly due to its still embryonic state during that decade. At the same time, their presence (in particular the VIEW Conference) is not to be underestimated, as many local game development industry players are always actively present at the event, which is held in the cluster's main hub (OGR Tech).[14] The only relevant corporate experience of those years was that of Impressionware (2003),[15] which, did not lead to any kind of follow-up in the cluster and/or city. It remains, therefore, an isolated experience, which then moved outside the region and merged with another company.

The first forms of proto aggregation are to be found outside the region. It was precisely during the mid-2000s that an initial form of relational structure began between several sector specialists (including Marco Mazzaglia, Marco Mastropaolo, Giacomo Marchetti, Emanuele Russo, and Filippo Vivirito), all of whom were working in Milanese companies (mainly in Milestone, but also in Ovosonico and Ubisoft). This group had, in addition to their origins and commuting to Milan, the common experience of Studio Lumiq. They were joined by an external group of people from Turin, who in 2013 founded 34BigThings after their training experience in Denmark. The place to meet and design after their daily return from Milan was, mainly, the International School of Comics. The crisis of Milestone after the closure of Leader Distribuzione (2012-13)[16] became the main breaking point with the Milanese experience: this moment was decisive in the decision of these professionals to settle permanently in Turin and try to set up their own game development studios. All the know-how of these professionals thus returned to the Turin geographical space.

Relevant to the local associationism was the birth of T-Union in 2013 (composed, among others, of Marco Mazzaglia, Valerio di Donato, Mauro Fanelli, Giuseppe Enrico Franchi, etc., i.e. people still relevant in the current cluster). It was the first trade association of video game developers in Turin. At the end of 2013, T-Union and the newly formed Turin companies decided to organise a local Global Game Jam, imitating the Danish model. Also in 2013, the CRT Foundation bought the OGR,[18] which would be reopened in 2017. This event would be preparatory to the opening of OGR Tech and the birth of the Quickload gaming acceleration programme, both in 2019.

4.3.2 *Collective actions: initiating actors*

Interestingly, the actors who initiated/were in the 'proto'-cluster, and now what is defined as the current video game cluster, are basically the same. Through their first relationships, both interpersonal among themselves (informal), and those in associative form with the institutions of the territory (formal), they were the real starting point for the actual creation of the local cluster. This feature shows how the cluster, first, is more individual-based rather than company-based or institution-based. The local industry has features that make it unique in the national panorama. The Turin cluster/ecosystem is the second most important in Italy after Milan. It is connected to Milan by proximity and infrastructure/mobility services, and, at the same time, it is also its main leading competitor (according to our respondents).

4.4 Local Industry Features and Components

4.4.1 Perimeter of the cluster

Before a definition of the spatial dimension, i.e. a potential physical perimeter of existence and activity of the cluster, it is useful to define the very perception of the object of the study: the meaning of the word ‘cluster’. The term, in fact, proved to be a headache during the interviews.

The term cluster, i.e. ‘dynamic geographic concentrations of interconnected firms and related economic entities that have reached a sufficient scale to develop specialised expertise, services, resources, suppliers and skills’ (European Commission, 2021), was not known by most interviewed actors. And often, once explained, it was not shared by them. This issue created a lack of homogeneity in the definition of the cluster concept itself, its semantic and pragmatic meanings, its functioning mechanisms and, consequently, also its geographical boundaries. Many interviewees gave their definition of the game development milieu in Turin. The term examples used by the interviewees were: cluster (5), ecosystem (7), network (1), aggregate (1), development pole (1), and structuring system (1). Each of the interviewees gave their own interpretation of the terms used: ‘*Not really knowing the technical definition of a cluster, I have always called it an ecosystem. Because [...] the relationships are extremely informal, and extremely disorganised. In the sense, they are not one to one, they are often many to many, or one to many*' (EF); *‘It's more an aggregate of...of things not really aimed at making video games, but so much at training people who could then make video games'* (IC); *‘Maybe I would be more to call it an ecosystem at the moment. We are still missing a few elements to get to be called a cluster, in my opinion'* (MF)

In summary, the Turin case is what could be defined as a ‘non-cluster’ cluster. We use the term cluster to facilitate the work in the Project, in a coordinated way with all consortium teams, but the one in Turin could be called a cluster as well, an ecosystem, a network, an environment and so on. The term cluster does not completely describe what exists in Turin. It is rather an evolving ecosystem still in the process of self-definition by all its actors. However, all of them agree that ‘something’ exists, and it is currently transforming and evolving. Quite schematically, the cluster can be divided into two main dimensions. A formal area that consists of three nodes: the companies’ node, the educational node and the events node, plus various other formal institutions, like OGR, Quickload, the educational/training schools, and so forth. The second one is the informal network between its members, which is quite paramount in the case of Turin.

Concerning the physical perimeter of the cluster, it emerges from the data that there is no official spatial reference boundary, as the cluster itself is not ‘officially’ defined in a structural or institutionalised manner. As a consequence, it is impossible to define a real perimeter for the cluster, also due to the presence, outside of it, of some central actors belonging to the core of the historical developers/studios of the cluster (in the case of Broken Arms in Acqui Terme);[20] as well as of other smaller studios still outside the core network of the cluster that are scattered throughout the Piedmont Region. However, in most cases, the geographical perimeter, even if not 'officially', is identified in the urban area of the city of Turin, with the OGR at its centre.

Borders, apparently, are more related to the presence of people than to institutions or real urban boundaries. Thus, the geographic scope of the cluster is unclear, as all core members originate in the city – except for the company Broken Arms, which nevertheless gravitates to the city network for many of its activities. This is also to be seen from an educational/formative, as well as a professional, point of view. Most of the current actors in the cluster, especially those working directly in game development companies, are/were trained in Turin. However, most of the "historical" actors had professional training outside the cluster, including outside Italy. This almost 'obligatory' passage was decisive in the formation of the first local professionals, as at the time the local training industry was qualitatively and quantitatively limited. In summary, the cluster is recognised as a sort of 'circle' whose geographic limits are identifiable with the city of Turin, except for a few sporadic experiences outside the city borders.

The activities of the production chain, although the cluster is not institutionalised, appear to be almost entirely 'complete': there are all the activities necessary for the formation of a sufficient talent pool for the local industry and the minimum institutions for the formation and maintenance/survival of local companies. The only component of the production pipeline absent is its final part, i.e. the local publishers. Thus, almost all the mechanisms that make up the production chain are present within the spatial limits of the city of Turin. However, from a market perspective, the local context is of limited relevance and provides no advantages.

A characteristic of local production is the high number of B2B products. B2B is a type of production that makes possible the existence and survival of the companies in the cluster. B2B is mainly done for companies outside the cluster (and/or outside Italy), but there is no lack of examples of collaborations between companies within the cluster: *'Last year we had a turnover of one million, but with almost no profit because we still have important expenses, of course. That is, the problem is that we, like everyone else, have to sustain ourselves mainly with B2B, which therefore does not allow us to scale, but gives you a small margin, so it grows a little, turnover increases, expenses increase, personnel increases, turnover increases'* (ML)

Business-to-Consumer (B2C), on the other hand, remains on ad-hoc projects. However, this seems to have greater possibilities for highly creative content. The stated choice of many interviewees is to devote themselves to targeted B2C production, once they have found a publisher, while doing various B2B work in the meantime. At least until the company's economic stabilisation: *'So, basically independent traction. Because practically all software houses that I know of make independent and/or B2B games. And they often do B2B to... forage their projects'* (MB). A few rare cases, but generally outside the main cluster network, set themselves to work only on B2C products, although all with a publisher already present early in the production cycle. Given the average size of the companies, and what seems to be a young and buzzing ecosystem, B2C is generally dedicated to quality and creativity-driven video games. This means that, even if it is impossible to be completely detached from the market's logic, according to interviewed stakeholders, the video games produced in Turin try to be at least partly outside its common mechanisms. The companies, as well as the various creative workers present in them, try to manage to do what they ‘like to create’, conceiving their own vision of what a video game should be regardless of industry requirements.

Section note: Within the geographical and cultural perimeter of the cluster, the film industry is also present. Turin is considered also the ‘City of Cinema’, with a long tradition in the sector (Crivello 2009). There are numerous institutions including the National Museum of Cinema and the Turin Film Festival. There is the Film Commission Torino Piemonte, a non-profit foundation dedicated to attracting Italian and foreign productions and support the local film industry. However, the two industries seem to be in no way connected, except for rare occasions, if not in open conflict with each other. This topic will be explored in the following sections.

4.4.2 Demography of companies: number and kinds of companies

The object of study is a small cluster composed of small and medium-sized companies (companies may reach a maximum of 80 workers, including employees, freelancers and trainees/interns): *‘So, it is nice to see that we have relatively small studios. So, studios made up of one, two, three people. There are, and there must be, because they are important, in my opinion, for the fabric of a... of an industry’. ’Then there are some studios that maybe have 5, 10, 15 years of history behind them, so they are already between 5 and 20 people, which, in our industry, in Italy, is a small video game company, but... excuse me, in the world it's a small video game company. In Italy it's already a medium-small company’* (VDD)

Schematically, the companies in the cluster can be divided temporally into 2 ‘waves’:

- 1st wave (ca. 2013), formed by the historical companies that built the foundations of the game production cluster in Turin;
- 2nd wave (ca. 2022), i.e. companies that often participated in the Quickload gaming acceleration programme and are currently trying to consolidate in the market.

To date, 14/15 companies seem to belong to the cluster. They are differentiated by legal status, size, and economic scope. The exact number is not precise: a distinction has to be made between companies and individual actors, actually part of and participating in the existence of the cluster; and those who are part of the cluster without being active participants/players or, due to personal choices, do not want to be part of it but are within the potential physical perimeter of the cluster.

With respect to the historicity of the cluster, currently only four companies are of particular relevance, as they are not only important in the specific production sector but also play a strong transversal role in the management and coordination of actions in/of the ecosystem. These actors, as well as the different institutions active in the cluster’s functioning mechanisms, are easily identifiable. These are:

- 34BigThings: the largest and most important company in the cluster, and the second largest in Italy, with approximately 50 employees (plus various freelancers and trainees; they can reach up to 80 components). Its founders graduated from the IT University in Copenhagen. It was acquired in 2020 by Embracer Group, a Swedish gaming and media company. The CEO of 34BigThings is Valerio Di Donato;

- Memorable Games: the second largest company in Turin, has a variable number of workers, up to 50 employees. Until the end of 2023, its name was MixedBag. The CEO of Memorable Games is Mauro Fanelli;
- Tiny Bull Studios: the company has a variable number of workers, which can reach up to 50 employees. The CEO of Tiny Bull Studios is Matteo Lana;
- Broken Arms: The company is located in Acqui Terme (AL), and is the only relevant company in the cluster network to be located outside the city of Turin. It has approximately 10 employees (but again, this number varies according to production). One of its features is that it took part in the gaming-related programme of the Australian accelerator ANZ Innovyz Start. The co-founders are Yves Hohler and Elisa Farinetti.

Some individuals are important both for the degree of recognition of the cluster outside its borders and for the transversal actions carried out within and outside it. For instance, Elisa Farinetti of Broken Arms is considered, locally and nationally, as a reference point in the training/mentorship of companies, especially new ones. Elisa and her company are a relevant part of the entire national value chain/pipeline, regardless of Broken Arms' B2C productions. This also includes the participation, in different roles, both in the local gaming accelerator programme and, in the past, in the gaming accelerator programme that had been active in Rome.[22]

Valerio Di Donato represents another example of the transversality of roles in the Turin cluster, as well as in the broader industry framework in Italy. 34BigThings, and the individual figure of Valerio Di Donato, are probably the most emblematic in terms of activities mixed between formality and informality, being present in almost the entire local (and national) cluster's pipeline: he is the co-founder of a nationally relevant private training institute, Event Horizon School,[23] which started in Turin but has expanded to six locations in Italy; he is among the founders and managers of Quickload; in general, he is a point of reference in the Turin ecosystem for information exchange, internships, presence at international fairs and organisation of informal community gatherings.

A further note must be made about Marco Mazzaglia. Mazzaglia is currently working with Tiny Bull Studios but has worked with all the major game companies in Turin. He is, among other things, a business developer and professor at the Polytechnic University of Turin. He is also known (and recognised) as a Video Game Evangelist throughout Italy. He has a vast knowledge of the entire Italian industry. His role seems to be decisive not only for various practical functions he has had within the cluster but also for the cluster's historicity and identity existence. If the cluster has assumed a certain identity with respect to other Italian ecosystems, it is due both to the set of mechanisms underlying its functioning, but also to the actors who, in different ways, have shaped its functioning: *'We were doing, well, together with Marco Mazzaglia, who, I mean, he's the human definition of a cluster...I mean, he's a cluster...we had founded...we pulled together this thing that I don't even remember what we called it anymore. Help...that was...T-Union'* (GF)

This process can easily be seen in the individual actors (as in the example of Marco Mazzaglia) and in the specific companies (notably 34BigThings, Memorable Games and Tiny Bull Studios), which in turn have within them individual actors with the same transversal roles. To this should also be added the decisive role of the gaming acceleration programme Quickload. In addition to the four historical companies, several smaller companies gravitate around the formers and are linked to the International Game Developers Association (IGDA), OGR and/or have participated in one of the three Quickload gaming acceleration programme editions. Among them are: Dramatic Iceberg, Futurats, Volcanite. In addition to the companies just listed, the research also identified studios that are part of the cluster, which sometimes attend community events, and to some extent feel partially involved (or not at all) in the formal ecosystem. These are: True Colors, Lullabyte Games, and NewbiX (in Asti). There are also some solo devs with games in development or already published (either solo or in collaboration with other companies), but it was not possible to interview them. Finally, there is a group of companies that are present, but with whom it was not possible to have direct contact. They are: Febucci, Deep Monolith, Novis, and Funix.

The cluster includes around 200 workers, but this represents a variable number and is susceptible to market and specific in-house production fluctuations.

Section note: This cluster operates as a non-institutionalised, loosely connected ecosystem, largely detached from key educational and organizational hubs like OGR Tech, Event Horizon School, and associations such as IGDA or T-Union. Its structure and actors are fluid and difficult to define, with the study's reconstruction shaped by the researchers' chosen depth and methods. These included personal networks, snowball sampling (inside and outside interviews), web research, interactive maps (e.g., IIDEA), and social media groups. Many entities identified—ranging from micro-studios to inactive or restructured companies—were found through informal, expanding channels. As a result, the number of active players remains an estimate.

4.4.3 Institutional support

The overall institutional system of the cluster is strong in terms of tertiary education, especially specialised private education. Training institutions are divided between private and public ones, although the former are more incisive in training the local professional talent pool. They are:

- Event Horizon School: founded in 2013, Valerio di Donato (34BigThings) participated in its creation along with other local players. It is the largest game development school in Italy, with branches in six cities;
- International School of Comics (Scuola Internazionale di Comics);
- European Institute of Design (Istituto Europeo di Design - IED);
- University di Turin (including DAMS, Disciplines of Arts, Music and Performing Arts);
- Polytechnic University of Turin.

Educational institutions, both public and private, are considered crucial for the development of the cluster, and an added value compared to other components in the cluster's value chain/pipeline: *'There is a great technical component, I dare say in Turin, that is missing in other areas. We should thank the Polytechnic. We should thank the University. The training that there is in Piedmont. I don't know. But there is certainly a very high technical skill component. And this means that it has consolidated the companies, it has consolidated the projects, it has consolidated the positions of these companies within... the world system'* (EF). One criticism levelled specifically at universities – also in Turin – is their apparent inability to move at the same speed as market demands, something that private schools manage to do. This turns out to be the main deficit of public tertiary education compared to private ones: *'In my opinion, the university, as I know it, as it normally sees itself, is too monolithic to respond to market innovations'* (GG)

Thus, an important component that helps to describe the cluster is the presence of an excellent talent pool. Many young workers are available as a professionalised workforce even before the end of the training courses in which they are enrolled, as they are already involved in compulsory collective curricular projects provided by these private schools. The abundance and quality of the talent pool immediately available for employment result in a real enabling factor for the cluster's functioning mechanisms.

The private schools are currently considered more important than the others. The educational/training value chain, not surprisingly, saw many teams formed fresh out of private schools (especially from Event Horizon School). The presence of such a deep network of technical educational institutions allows, according to our respondents, at least the presence of a sufficient number of professional workers for the needs of companies in the cluster: *'In my opinion the...the resources are there. Or at least they are starting to be there. [...] 10 years ago, 8 years ago, we had a...a shortage of talent. [...] In my opinion today, I'm speaking at the Turin level, but also at the Italian level, we no longer have a shortage of talent'* (MF)

Moreover, the function of private schools is also to 'fill the void' left by the University of Turin, as there is no specific course dedicated to game development: *'The schools understood as Event Horizon and others, have given...have in my opinion broadened the landscape. Because unfortunately in the...in the classical academy, in the classical university there is no specific course in that.'* (EF); *'So, as far as I know, there is no public course in game development. I mean, there is the Polytechnic, but it's something tangential to...to video game development. With some of the guys...some of the guys who come to Beer2Peer, they're students at the Polytechnic. But they got interested from them. Not because there was a specific course, of...of game development at the Polytechnic.'* (MDN)

Most of the time, Turin's talent pool cannot be absorbed into the local industry fabric, creating a disproportion/imbalance between trained students/workers and the absorption capacity of the local industry. However, the same problem seems to recur in the national context: *'In Italy, it is a lot if we absorb 20 a year. But to exaggerate. And so, this is a big problem, because all these guys here then find themselves with skills and not being able to use them in any way. And that leads them, on the one hand of course, or to look abroad, cyclically, right at this moment in history'* (ML)

Turin is also home to a branch of IGDA, the largest non-profit industry association at the international level. The Italian chapter of IGDA was founded in 2020, absorbing the structure of T-Union. This was the first IGDA chapter in Italy. It is probably the most important channel for the cluster's non-institutional 'formal' mechanisms, through the creation of events dedicated to game developers. IGDA's presence in Turin is also an enabling channel of communication and interaction that helps to connect the actors in the cluster with the rest of the country and beyond. In fact, the presence of several IGDA chapters in Italy, Europe and around the world enables Turin-based companies to communicate and interact directly with IGDA members across all countries.

The Italian Interactive Digital Entertainment Association (IIDEA), the largest trade association of the video game industry in Italy, is also present in Turin. It has a more political connotation, aimed at enhancing the role of video games in the economy, society and culture of the country through various forms of lobbying activities. However, it is perceived to a lesser extent than the semi-informal role of IGDA, since, despite being responsible for obtaining the national tax credit[26] for the video game industry (2021),[27] it is perceived as only structured for dialogue with the public institutions. This 'way of doing things', as it seems to be for the DNA of local industry actors, is considered distant from what companies 'are able to manage' (and/or understand), and therefore considered less than the 'concrete' activities organised by IGDA.[28] Even though the companies themselves say they need more public involvement and State/national government participation in the industry: *'Because when IGDA Italy came, there was...I mean, there was nothing like IGDA in...in...Italy. There was IIDEA. But IIDEA is, let's say, an institutional representation, no. So, it doesn't talk to individuals. IGDA, on the other hand, has bridged that gap of individuals'* (JS).

Public support, on the other hand, is fragmented, often relegated to single actions, and above all, not recognised as effective by cluster members. Thus, they tend to exclude local public institutions – above all a political and administrative nature, such as the City Council of Turin and the Piedmont Region – as active components or concrete actors in the cluster. However, on this last point, companies often refer only to the macro level, using the central government and national politics as the real – and often only – relevant interlocutors for the national and local industry.

Local public entities, such as the Turin Chamber of Commerce, play an active role but are not always recognised as such by the interviewees. On the contrary, the Turin Chamber of Commerce feels itself to be an active player in the cluster and sees in the collective non-participation of companies, or even of other non-public institutions such as OGR and CRT Foundation, the problem of the cluster's weaknesses. In this sense, the companies are seen as 'solo players', almost exclusivist and 'elitist'. Indeed, over the years, a form of mutual exclusion in actions and interests seems to have taken place, distancing the Chamber of Commerce from the main network of the cluster. In this way, a mutually exclusive mechanism is applied between recognised cluster members and the many public institutions in the territory – at least those interested in the cluster, whereby they are reciprocally 'blamed' for the weak or lack of bilateral interaction.

The Piedmont Region, on the other hand, apparently more than the City Council of Turin, is perceived as a potential partner for collaborative projects or as a source of funding for possible joint projects. However, it emerges from the data that there is a certain degree of relational incompatibility between the cluster actors, especially companies, and institutional actors. The 'language' spoken by the two parties is considered extremely different, as are public relational modes and attitudes. The industry workers' inability to 'speak political language' creates a practical separation of the two sides, seemingly difficult to bridge, and results in a lack of connection with political administrations: *'So. In my opinion there is really...I try to make it super short, there is very little visibility, for the institutions, city and region, to what the companies are. They more or less know who we are, they know we exist. I don't think they value our presence as fundamental. Or something to... to try, to help, to incentivise. I think there is also a flaw in us, humanly speaking. We are too nerdy and too unaccustomed to talking to institutions to have that kind of relationship there.*

In fact, the Italian Association manages to achieve some interesting, important, good things. And it works. But because there is a person who speaks their language inside. We the [...] from this point of view here is extremely informal, made by technicians, and made by programmers, 3D artists. Maybe people like us who are... we are company founders, we are entrepreneurs. But, in general, it is very technical. Its soul is just technical. And it makes the conversation much more difficult' (EF)

The role of the City Council of Turin is seen as not relevant in the cluster's functioning mechanisms, but at the same time decisive in the low degree of public recognition of its members. From the interviews, it emerges that consideration and recognition are absent on the part of the public administration of the city of Turin, and how this absence of recognition is detrimental to the actors belonging to the cluster: *'there is still no awareness, on the part of the municipal administration, with respect to the...the heritage that exists and is developing here in Turin with respect to this thing'* (MM); *'So, well, I would say that at an institutional level, i.e. the city of Turin, or in short, everything connected to the Piedmont Region, all this stuff here, frankly I can't say that they have been decisive in the birth of this cluster. If not in an extremely indirect way, which I might not even think of now'* (ML). One possible reason is that the city sees the territory as still tied almost exclusively to the manufacturing industry: *'I don't know if this is due to a territory that still suffers somewhat from its history tied to manufacturing...to manufacturing...eh, yes, so much so that one of these interlocutors, here I really can't say the name, but the answer he gave us was quite discouraging. He goes "no, no, this stuff is not really in the DNA of our territory"'* (MP), or to the film industry: *'The only major institutionality, because, let's say, the city of Turin, as an administration with respect to the world of games, has always been a little bit more, let's say, conservative [...] In the sense that Turin has been the city of cinema. So that is to say, maybe the Film Commission is very strong on cinema. They've always seen it, maybe as something that could attack the... everything that is spent on cinema'* (TG).

This is in great contrast to, for example, the local film industry, which is well rooted in the economic and cultural history of the city of Turin and the Piedmont Region. The presence of the Film Commission Torino Piemonte institution seems to create a positive standard with respect to what the local gaming industry could reproduce in a favourable institutional setting. However, the very existence of the Film Commission, and the film industry as a whole, is perceived to undermine the recognition and the finding of alternative (and/or parallel) economic resources for the local game development industry. This is also reflected in the almost total absence of contamination between the two sectors, which, despite their many affinities and a common past (Studio Lumiq) and present (VIEW Conference), do not present any real and visible forms of mutual collaboration. Only specialists working in both sectors are present, in extremely specific areas and with definite skill sets (mainly sound). Cross-sector 'pollination' processes, especially towards the gaming side, seem to have taken place in the course of the shared experiences in the first half of the 2000s, but they do not seem to have had any form of continuity – or at least continuity perceived by the interlocutors, not even on the side of the interviewees belonging to the University – or impact.

Type of Institution	Level of formality	Impact on the Cluster	Level of importance given by respondents

Public Educational Institutions	High formality	Mid-high	Mid-low
Private Educational Institutions	High formality	High	High
Talent/Labour pool (not an institution, but a key component)	Low formality/absent	High	High
Individuals (not an institution, but a key component in the cluster)	Total informality	Very high	Very high
Companies	Low formality	High	High
IGDA	Mid (Institutionalisation with low formality)	High	High
T-Union (former)	Mid (Institutionalisation with low formality)	Mid-high	Mid-high
IIDEA	High formality	Low	Mid-low
OGR	High formality	Very high	Very high
Quickload	High formality	High	High
Tech&Tonic	Low formality	Mid	Mid-high
Beer2Peer	Total informality	Mid	Mid
Global Game Jam	Total informality	Mid-high	Mid-high
City Council	High formality	Low	Very low/absent
Piedmont Region	High formality	Low	Low
Chamber of Commerce	High formality	Low	Low (mid-high for the Chamber of Commerce)
Film Commission Torino Piemonte	High formality	Very low/absent	Low (negative for many respondents)

Table 4 – Turin Cluster Institutional System

The presence of an extremely structured (and historically embedded) film industry thus seems to be an obstacle to the presence itself and the potential regional and state funding possibility for the local game development industry. The regional film industry is seen as 'antagonistic' to the local video game development industry: *'For them we are definitely competition. [...] They have no intention whatsoever of...of opening up to us. [...] I attended a couple of events where the...there was also the representative of the Film Commission who, just...I mean, conversations and horrible things came out. For them we are, dunno...they don't see us as an art, they don't see us as a production complex, they don't see us as something to be developed economically speaking.'* (EF)

At the same time, the difficulty of interfacing through dialogue on the part of the representatives/workers of the game production cluster is emphasised in comparison to the 'suit and tie' attitude of the representatives of the film industry, who are more accustomed to interfacing with public interlocutors in fruitful relationships in the procurement of public funds.

4.4.4 Cluster « DNA »

The DNA of the cluster rests, first and foremost, on the informality of its whole structure. The first instrument of recognition of the cluster is precisely the informal relations between its members: *'Perfect informal network. Everyone is very helpful and always ready to help each other. '* (FR)

The interviews revealed a marked sense of diversification with respect to other Italian realities. It is seen and experienced with a sense of pride compared to other clusters in Italy, where it is often emphasised that it possesses unique peculiarities: *'In my opinion, the Turin cluster differs in the fact that it is very linked...it is very cultural. In the sense that a cluster is very tied to independent production and, let's say, what can be...'. 'In the sense that, let's say, Rome...wait, first I say...the Turin environment, in my opinion, is very collaborative'* (TG). The Turin cluster is seen as such precisely because it was born and evolved in Turin, thus absorbing its characteristic features: *'geography has an immense impact on the... the affordances it creates in people, in companies, and in the community. So definitely. This stuff can...it happened in Turin because it couldn't happen in Milan. It definitely happened in Turin because it couldn't have happened in Rome'* (VDD)

This is especially so in comparison to the nearby city of Milan. This is marked in almost all interviews, contrasting actors and dynamics considered to be all too formal/mechanical/impersonal in Milan, with instead a more 'human' and relational dimension of Turin, as well as being less competitive among its members: *'Like the Milanese have a much harder time doing this. They live it a bit more...competitively' (*EF); *'In Milan it is mainly made up of companies that are already very large and tend to be unaccustomed to getting together with a common goal' (FR).* This trait of the cluster's DNA can be found in what emerges from the interviews as 'feeling/sense of belonging' to a specific social and professional reality, identifiable with what the city is and represents from a logistical, cultural and relational point of view: *'Yes. And there is also a sense of belonging to this... to this... to this ecosystem. I mean, there's a moment of pride in being part of the ride in Turin. It's a bit silly, but at the last Italian Videogame Awards they awarded us for Outstanding Individual Contribution, and Zeno Colangelo for Tmesis for Outstanding Art in his game. And we stopped to take a photo with the two of them... I mean, two out of five awards went to Turin, right? '* (EF).

Therefore, 'belonging' to Turin enhances the historical-social-cultural traits of its inhabitants, including those belonging to the cluster, and the quality of relations within it. The working environment of local game development is directly influenced by this general 'environment' and the cityscape: *'Turin clearly has an additional advantage. Turin is very hippy, very red* [with reference to politics, i.e. 'communist'. A.N.]*. Not in the sense that this is necessarily a good thing [...] But from a communicative point of view, from the point of view of lateral thinking, it has an advantage. People who are used to thinking differently are more likely to want to bring about social change. Maybe not what they think. But there...it's more likely that...that...Because, if you want a financial hub where the big money is, you'll go to Milan. If you want a political pole, you'll go to Rome'* (GG)

A fundamental trait that emerged from the interviews is the extent to which its peculiar characteristics arose and developed specifically in Turin, and the extent to which, if at all, such characteristics would have been possible elsewhere. First, the small size of the city (and of the cluster itself) favours more collaborative and less competitive relationships. Secondly, despite the presence of other Italian cities with greater economic resources, the socio-cultural geography of Turin has historically influenced the creation and development of this ecosystem. All these factors have allowed the city to be an ideal location for creativity and innovation in the game production industry. In short, Turin has created a fertile environment for the development of the sector, supported by a cohesive and collaborative community, and this creative milieu could not have been reproduced in any other city in Italy: *'No, the cluster is like that because it is in Turin [...] because Turin is smaller. And therefore, it allows a different quality of relationships'* (MM).

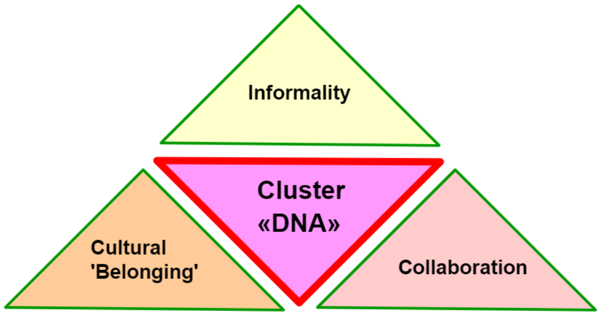

Figure 6 – The DNA of the Turin cluster based on its recurring values

The community considered 'relevant' in the cluster, which in turn can be defined by a network of mostly 'historical' actors – through personal and professional acquaintances pre-2014, resulting in a definitive community consolidation as of 2014, possesses characteristics that are typical of the industry: companies are mainly interested in the construction of the corporate portfolio, and the same can be said on the part of the individual workers; forms of abnegation of working conditions are present in the function of sectoral growth and, as such, beneficial for the entire industry; preference for a collective sense of belonging and network interactions in place of trade union representation or other forms of associational protection. The community also shows a strong interest in the growth of the local environment/ecosystem, even if not in an easily definable form outside the amicable dimensions.

The cluster at the same time is also based on solid and recognised practices. The exchange of information, the exchange of good practices, and up to the exchange of hardware that some companies are not able to obtain directly. It is not uncommon for some companies to share the same work environment, even in the case of more structured companies, together with recently established start-ups. Cluster's functioning mechanisms are thus based on the aggregative role of its constituent actors and their willingness to help each other: *'there is an infinite willingness, among people within the cluster, and within companies, in the: 'if there is a need for something, and someone asks, we all tend to, in some way, take action, make it happen'. I mean, at the end of the day, the whole thing is about people willingly going out of their way to help someone'* (VDD)

In terms of the comparison of the value given by the community to institutionalised 'formality' versus 'informality' in the cluster's functioning mechanisms, the latter (i.e. the informal relational dimension) stands out as the privileged one, even if it presents limitations in the forms of access/penetration into the cluster itself. Although these two 'souls' coexist perfectly together: *'So. Now, the thing that is going very well in Turin is that these two souls will integrate very well together [...] if, however, the informality, and the desire to spread, to communicate, to spread information* *that there is in the Turin area, and in Piedmont in general, in my opinion helps a lot ... really a lot to build then something solid that can be a business opportunity, an opportunity such as a mentorship within a university, or something of this kind. And one feeds the other, and vice versa. Because, in the end, it's a very virtuous circle that's happening in Turin. From...informal meetups we move on to more structured things, which create better professionals, who participate in events....do...redo...re-have those informal relationships. And...and we continue like that. Very positive, in my opinion, the relationship between the two...two components'* (EF).

Cluster Characteristics/Mechanisms	Significance for the cluster	Degree of 'identifiability' for the cluster
Formal Relations/Institutions (educational institutions, accelerators/incubators, foundations, public institutions, etc.)	High	Very high
Informal Relations	Very high	Very high
Talent/Labour Pool	High	High
Individuals	Very high	Very high
Companies	Very High	High
City of Turin (uniqueness of the cluster because it is in Turin)	High	Very high
Differences compared to other cities (particularly Milan)	High	Very high
Feeling/sense of belonging	Mid-high	Mid-high
Associationism (voluntary work)	High	High
B2B production	High	Mid
B2C production (type of games)	High	High

Table 5 – Turin cluster DNA: Cluster Importance Levels

The development of the formal element is rapidly becoming the possible goal of the cluster's transformative process, while the informal component continues to remain in the background: *'The informal part, very much in the beginning. But then it takes the step of saying: now we are big, so we have to position ourselves in... with the institutions in a certain way. Showing numbers, showing that it's not that "oh, we're playing games, and it's fun because we're playing games". We are doing projects that bring complexity, and that then bring benefit. Probably, companies that have grown from 5 people to 70, 80, or 50 as we are now, is still a sign that things, not games, are working. Even just from an industrial point of view'* (MM).

In the case of a company located outside the city (e.g. NewbiX), but also of other small studios in the province of Turin and not considered part of the 'historical' relational network, considerable difficulties of access were encountered. In the case of NewbiX, the company preferred an initial approach to the market through another territory.[29] It is not yet clear how potential members, not belonging to the core/historical network and not involved in the Quickload acceleration programme, can be involved or absorbed into the internal dynamics/mechanisms of the cluster, as there seem to be negative and self-exclusionary approaches on both sides: *'But at the beginning support from nobody. I really want to emphasise that because it was just...it's just this thing that was a bit of a problem for me. Because if I had known things later, I would have moved in other ways. But the initial support was zero'* (GB).

Another key observation is the wide availability of senior members within all informal functioning mechanisms, as well as of some junior members who are in relevant positions in the formal institutions of the cluster – especially in IGDA. Although the cluster has a limited amount of seniority, most senior members are well-prepared to participate and collaborate in cluster activities. As the cluster structure is neither rigid nor vertical, these roles, also held by non-senior members, are never considered 'out of place'. This is related to the strong 'voluntarist' component of the cluster, which is necessary for its internal functioning. The absence of entry and membership fees underlines the voluntaristic side of the cluster.

4.5 Cluster evolution

Due to its young age, the cluster, at least in its recognised institutional part, has not yet had time to complete any actual evolution cycles. However, since the presence of a 'proto'-cluster at the beginning of the 2000s, the structure is increasingly consolidating, with a complete industry pipeline and with all the requirements to meet the local labour market professional demand.

4.5.1 Critical moments and phases

A potential timeline of the main events that occurred in the Turin cluster is as follows:

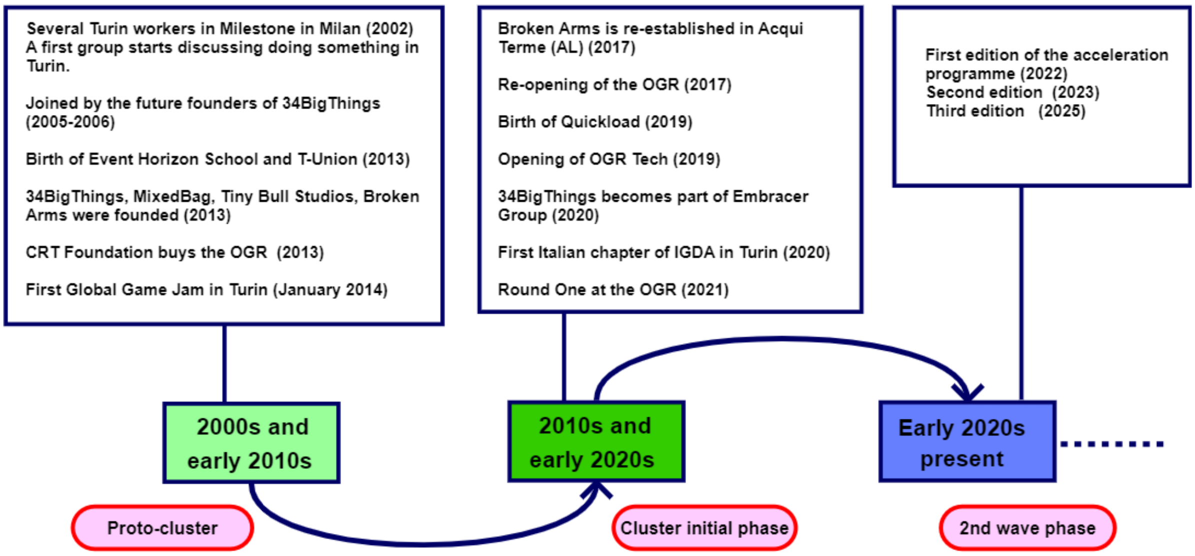

Figure 7 – Tentative timeline of the Turin cluster's evolution (main events)

4.5.2 Evolution curves

Given the young 'age' of the cluster, the evolutionary curve has not undergone major shifts since the 'official' establishment of the ecosystem. Since the so-called 'Year-Zero' (2013-2014), the founding companies have remained in the ecosystem, having various fluctuations in the number of employees and collaborators linked to fluctuations in the industry market. They were joined by new companies, mainly related to the participation in the gaming accelerator Quickload and the almost constant presence of new talent pools coming out of private schools and universities every year. The accelerator programme, seen as a formal institution in the cluster, seems to have consolidated itself in the local system, becoming a reference point for most of the new companies, while the OGR has become a spatial/physical reference point for game development events.

The various activities that are part of the formal, low-institutionalised mechanisms present in the cluster (Tech&Tonic, Beer2Peer, etc.), on the other hand, expanded in number and consolidated from an organisational point of view, and they still maintain a high degree of substantial informality. The number of collaborations and mentors present during these events increased, with dev talks not only focusing on local players but expanding into the national and international frame. In any case, they are always embedded in a context of high informality between organisers, participants and bystanders.

4.5.3 Major factors of change & growth

Transformation factors, in the progressive but limited transformation process of the cluster, stem mainly from the actions of individuals, often through consortium actions/activities. Supporting participation (mainly private) always originates from the presence and interaction of the historical actors belonging to the cluster, and their willingness to interact also with the part of the ecosystem existing outside the core network of existing companies.

One of the greatest evolutionary ‘pushes’ of the cluster stems from the actual activation of Quickload's acceleration programmes. The gaming acceleration programme has indeed considerably modified the internal dynamics of the cluster, at least with respect to the informal mechanisms present until the ‘official’ birth of the cluster. The creation of greater visibility of the cluster in the national context, resulting from the presence of Quickload, has also changed how the different actors relate to the newcomer companies, thus institutionalising part of the pre-existing relationships: ‘*In Turin there is the Quickload accelerator, which is specifically for video games. And that makes...a difference insofar as it mainly attracts the attention, of people to this area here. And in fact many people, outside of Turin, came to Turin, or were interested in Turin, because there was this accelerator, which was one of the few things you could refer to'. ‘And not only that it's an interesting subject to go and talk about, but then it's...almost a centraliser of things, isn't it? So, there's the accelerator.'* (TV). Founded in 2019 by 34BigThings, OGR Foundation and with the participation of Microsoft, it is now in its third edition. It has gradually expanded the territorial reach of the companies involved in its acceleration programme, not limited to local start-ups, activating collaboration processes with other companies in the cluster and, above all, between companies involved in each year's acceleration programme.

4.6 Collective actions

Collective actions in the cluster are mostly informal. Associationism, mainly of a voluntary nature, is the main mechanism among the different collective actions. There is no institutionalised form at a higher level than this one that organises collective actions, at least not involving the totality of members belonging to the cluster.

4.6.1 Main activities & collective actions

The functioning mechanisms of the cluster, divided between formal and informal actions/activities, have created a self-reinforcing and fully functioning ecosystem. These mechanisms define the characteristics of the cluster itself. At the same time, they are not fully ascribable to the EU definition of the term cluster, as, despite the existence of an evolved and comprehensive training/education value chain, or even what may be defined as a real industrial pipeline from training to the presence of structured companies, it is not well defined in its size and/or spatial perimeter, in the interconnections between actors/members and actual structure.

The cluster's most identifiable production chain is currently composed of actors positioned both horizontally (mainly) and vertically in the overall ecosystem: companies and private schools/training institutes/universities are horizontal with respect to other single categories of institution/worker (companies collaborating as equals and 'exchanging' their members among themselves, training institutes operating in parallel in the creation of specific talent pools); they are partially vertical in the chain, to which internal and external funders can be added (CRT Foundation, OGR Foundation, Microsoft, etc., located in OGR and through the presence of Quickload). Although limited, the public institutional component can also be considered somewhat relevant (Turin City Council, Piedmont Region, Chamber of Commerce, often for single collaborative events). The main collective activities concern the exchange of resources and information between members, through horizontal processes. Participation in events such as national and international trade fairs tends to be on an individual company basis.

4.6.2 Stakeholders' motivations and benefits

The motivation for different stakeholders to participate in collective activities is manifold. On the company side, belonging to the cluster helps to enter the communication and relationship network between companies (historical or not) in a collaborative and information exchange function. On the other hand, the benefit is also to meet the individual elements within the companies (and the cluster). For other stakeholders, the motivations are part of their institutional missions (more students for private schools, more investment continuity for foundations, more active support to the local industrial fabric for the Chamber of Commerce, etc.). The biggest contributions, therefore, are in the creation of formal and semi-formal events, often targeting specific game developers' issues, inviting international guests and mentors, but also in the continuous effort – of a totally voluntary nature – in the creation of informal events. All other potential benefits and potential contributing actions/activities are considered of little relevance.

4.6.3 Networks & collaboration

In the Turin cluster, there is no official structure, nor official central actors coordinating the actions/activities taking place. In fact, there is a perceived absence of a leading/driving company (or at least a company that created a super hit video game) compared to what should be the industry standards, able to take this role for the Turin ecosystem, as well as for the national industry: *'Everyone...so there is also some company that is a bit more structured anyway, the super sample of 4,500 people is obviously missing, a type...that type of firm is clearly missing'* (VDD)

However, informally, the OGR is the physical centre of reference for the cluster, whereas the four historical companies, together with specific individuals operating in OGR and Quickload, are its reference actors. Other individuals, such as Marco Mazzaglia, are both the internal reference figure and the external 'image' of the cluster.

The cluster members are connected at two levels. At the informal level, social relations between the members, through the organisation and management of informal events, are the most preponderant. This level is where the main activities within the cluster take place, such as the exchange of information, knowledge, hardware and software, expertise, and thus results in the main benefits for the companies. At the formal, or semi-informal level, events organised by IGDA, for instance, turn out to be a very important means of connection between old and new cluster members. They involve newcomers just out of school (or students still in the course of their studies). From a different point of view, online communication channels, especially via Discord, turn out to be the main vehicles of mutual connection and communication, used mainly for the exchange of information (in an informal manner). All these forms of connection contribute to strengthening the sense of belonging to the community, more than to the 'cluster' itself, partially solving the problem of isolation and lack of external recognition that is typical for these kinds of workers. The cluster, so far, seems not to have contributed, at least effectively, to forms of connection with the external world/stakeholders. The only advantage found is that, in the exchange of information, contacts, and work between members, it is possible to exchange contacts of external stakeholders for potential jobs.

4.6.4 Mobilized resources & competencies

The main resources mobilised are associative support, of a totally voluntary nature, and thus all those competencies for the organisation of events (including graphic designers, photographers, etc.) and the facilities to host them. The skills mobilised derive mainly from expertise already present in the cluster, namely the expertise possessed by individuals who in turn voluntarily provide it to the community. The local Game Jams, organised annually by IGDA, possess all these characteristics of mobilising resources and skills on a voluntary basis. At the same time, the cluster is deficient in a fundamental infrastructural component – and thus of overall territorial resources, namely the lack of adequate workspaces, an issue probably linked to the industrial archaeology of the city, with large companies historically dedicated to manufacturing production. Hence, it is difficult to find suitable spaces at affordable costs, despite the relatively low cost of living.

4.6.5 Coordination & control formal structures

The coordination and control of formal structures is one of the few vertical components of the cluster. OGR and Quickload have a vertical structure that organise institutional actions and objectives. In contrast, associationism and semi-formal activities such as Tech&Tonic, Game Jam, etc., are done on a voluntary basis and have a strong component of 're-circulation' of people participating/organising those events. These institutions also possess a decision-making structure, but it does not affect the informal nature of the events or other inter-institutional relations.

The strong component of horizontality of the cluster, with individuals belonging to several institutions (companies, private schools, universities, Quickload, IGDA, IIDEA, etc.), allows for a fast and streamlined coordination. This allows, at least for the members of the core network of the cluster, a strong component of reciprocity. Forms of solidarity are almost spontaneous, as are informal relationships between members (exchange of information, jobs, team members, etc.). Communication tools are concentrated in online communication platforms, in particular Discord, which in turn allows for a high degree of informality in communication and fast and practical interactivity between cluster members.

4.6.6 Financial aspects

From the point of view of financial aspects, respondents do not seem to perceive the cluster as relevant. Indeed, cluster membership does not seem to entail any real economic advantage. This seems to apply to both companies and individual workers. This fact is explained by the functioning mechanisms of the gaming market: since the market for video game production is completely global, and currently managed almost entirely through digital distribution, being positioned in the sectors' local supply chain does not confer any advantages in terms of professional placement and individual earning levels. In contrast, from the point of view of overall economic costs, both the costs incurred by companies and those of individual workers are recognised as sustainable, if not advantageous. Advantages are perceived from the geographical and logistical framework provided by the city. Consequently, these advantages are not related to actual cluster membership but to the mere fact of being in Turin.

From the point of view of companies, being in Turin allows lower studio rents than in other Italian cities. This applies to the logistical costs of moving and working infrastructures, too. The same is also true for the cost of labour, logistically ready on site due to the presence of schools in the urban area, and in turn willing to have lower salaries due to the lower cost of living compared to Milan and several other Italian and European cities.

From the point of view of workers, this is even more evident, as the cost of living in Turin is perceived to be significantly lower not only than the neighbouring city of Milan but also than other Italian urban, economic, industrial and cultural poles (Rome, Bologna, Florence, Venice, etc.). Costs are lower for rents, urban transport, etc. This context allows significantly less time spent and cost for transport than commuting or living in Milan, giving workers greater margins for free time and parallel professional projects. The economic 'solidity' of the workers, although fluctuating in line with the rest of the sector in Italy, is also better than in other clusters in the country. To sum up, the Turin cluster has specific advantages in terms of economy and liveability for its members: *'And then, I think that the cost of living, the fact that Turin is a bit of a...somewhere between, let's say, for more metropolitan cities like Milan or Rome, and a town...that is, Turin is a big country city, we know that. With all its pros and cons. But the big pro is that life costs half as much as in Milan, or Rome, or Florence, etc. etc.'. 'But the big advantage is that it costs less, it's more accessible'* (ML). However, these advantageous conditions, and the economic security that comes with them, are only perceived as such because of the urban and living context of Turin. At the same time costs for companies are still considered too high, especially the cost of renting office spaces. Salaries are still seen as too low and punctuated by long periods of non-earning.

4.6.7 Benefits for the stakeholders

Stakeholder benefits are to be divided by the level of involvement in the cluster and the different actors considered. The following description, divided into several points, identifies the cluster's determining traits with respect to stakeholders' benefits.

At the level of companies, the main benefits are the exchange of knowledge, resources and skills/collaboration, which are considered the major advantage of belonging to the cluster: *‘Belonging to the Turin/Piedmont cluster helps especially in terms of sharing information, whether it's about technical knowledge, human resources or not, and tangible help during international events’* (FR). This can take place in different ways. The most common, and concurrently considered among the most useful, are informal get-together meetings, or semi-formal/formal activities: *‘Like...like, let's say...I mean, the benefits of participating in this cluster that certainly, there is a...a facilitation to the...to the sharing of knowledge. Through the events we do, through the accelerator itself. There is a facilitation of access to contacts'* (TG)

At the same time, many respondents recognised online communication as facilitating relations between cluster members, especially for the exchange of knowledge and mutual help. Discord appears to be the preferred platform for such activities: *‘That if you have a problem you write on Discord to one of us, and we are likely to give you half an hour of time and call to... to solve your problem. That's the biggest advantage you have. This is the thing we all do’* (EF)

Information exchange is crucial for survival in the sector: technical knowledge, bureaucratic information, practical info on trade fairs, etc., are the main needs of the companies belonging to the cluster. Whereas, on the professional side, hardware, labour contacts/human resources are exchanged too, up to work that companies cannot handle at that specific moment: *‘So, it goes from “I need work so I pass you B2Bs that come to me that maybe I'm not interested in, that maybe I don't need so much at this time”. So I pass you work that maybe comes to me. That happens quite normally'* (VDD); *‘Yes, because then in the end, for me it's all about...very collaborative. That is, if there is something that I don't know, or don't want, I tend to look for a contact with someone in the local community who can...help you with that.’* (TV)

This exchange of knowledge and hardware components is not the only form of ‘exchange’ that takes place between cluster members. This mutual aid mechanism may also extend to other needs, such as the need for specific figures like accountants or other specialists/professionals: *‘But, look, for example, just on a practical level, I had an accountant following me to open the company. I asked Matteo Lana of Tiny Bull who their...their accountant was. He gave me the name and now we are still with that...with that accountant there, after two years [...] Or I need someone's contact. Contact for the, I don't know, for the specialised press, I know I can ask Tiziano, I can ask Valerio, I can ask Tiny Bull itself, in short'* (MP), or common spaces/working environments: *'For example, trivially, we now have one of the...of the new companies that have sprung up in Turin recently, called Futurats. It came to stay in our office. We left some of our space that we didn't need, just to try to create a bit of a synergy with them [...] I know, it's quite a small team.'* (ML)

Therefore, it is more likely for a company belonging to the Turin cluster to exchange work commissions with other members of the same ecosystem: *'If you tell me you're Piedmontese, I say "come on, let's do it". I mean, I'm even happier to give him a hand. But, basically, we do it with everybody. We give everyone a hand. When you become part of the affairs of Turin, surely, if you have the contact of one, within 10 minutes you have the contact of all, within 10 minutes you reach everyone. And if you write an e-mail, or a message on Discord, someone answers you, always'* (EF)

Another important benefit comes from the city and its logistical features. The geographical/logistical component puts the cluster's members in an easier position to reach the city's areas of interest, while the transport systems also help all actors to meet without any particular problems: *'Geographically, in my opinion Turin helps to aggregate. Because it is small. Because you can't reach it...that is, all the studios are within 20 minutes' reach by...means of transport. Even by car'* (MB)

Lastly, although there seems to be no direct market access benefits, cluster membership facilitates access to the global business community: *'Yes. I don't know if it is market access in the strict sense, but access to the business community yes. Yes, also market access. Because then the next step is a business community that makes market product'* (MP)

At the level of the other institutions present in the cluster, the main benefits are to simply increase the number of students in the case of private schools, or to extend actions and activities further into the territory as in the case of the Turin Chamber of Commerce: *'And therefore, the Chamber of Commerce's activity is also aimed at enhancing, promoting, also internationally, these new sectors. Space is one. Artificial intelligence, [...] manufacturing is another. Perhaps gaming will become one of them again. We have always [...] followed the gaming industry in Turin, not only because I think since I've been working here, 20 plus years, we promote in Turin meeting, which is a very specific event that already dealt with the gaming industry in the past years, decades ago, which is View Conference, which has always dealt with virtual reality, but not only in video production, cinema, but also in gaming. So, with that excuse we were trying to bring excellence, good practices, networking moments, thanks to the fact that these third-party organisers were bringing this event to Turin. Over time, so we intercepted various companies'* (NM)

At the level of individual workers, the benefits of cluster membership seem partially limited. In fact, being in the Turin cluster does not seem to be a prerequisite to entering the game development industry: *'If it's not a...thing he's interested in, in my opinion he can easily enter the...profession without it. I mean, it's not a necessary step […] Concrete advantages in being part of it is that you are not in a cellar isolated from the world'* (GF)

The individual worker is eventually helped in his or her career path, as he or she has an easier time finding and changing jobs within the cluster's informal relational network: *'One good thing about the cluster is that it's not exclusively aimed at those who have a company of...development, but those who are, in a collateral way as well, interested in this type of industry. [...] So even for a worker,* *whether it's a freelancer or whether it's a person who is looking for a job, being part of the cluster is definitely a speeding factor in finding a job in the game industry'* (MP)

This process starts already during the school period, as the game development training schools in Turin allow for a higher quality of training, and quicker entry into the ecosystem of the cluster: *'And in my opinion it's useful even before being a worker, actually, if I were a person who had decided at a young age to do video games in life, Turin is one of the main places where I would go...to do this path. Because in Turin there are the schools that have the best... that have the best name, there are the companies that have the best name, and so on, no? So, there's a sector that attracts you to say 'I come to Turin', to study, and to work'* (TG)

From a salary point of view, working in the Turin cluster has both disadvantages and advantages. Wages in Turin may be lower than in other clusters: *'Probably from a salary point of view, no. In the sense, Milan pays a bit more, probably'* (EF), even if the lower cost of living and the better work-life balance make living in Turin more sustainable for a worker in this industry: *'The other issue is the livability of Turin. That in my opinion, post Covid, all developers are well aware of a work-life balance discourse, and Turin offers an enviable work-life balance, in Italy. Um, I don't know if it is more attractive than, say, Milan'* (EF)

Lastly, the benefits for the individual worker of belonging to the cluster are both in the sense of valorisation of one's own person (both professional and relational) – a factor not present in the recognition by public institutions towards the cluster, and a concrete solution to the sense of isolation, typical of the category of workers employed in the game development industry: *'I feel... then this is very personal. I feel that I am an active participant, insofar as I feel, in my own small way, that I am able to promote a local community, or a cluster of people coming together, or talking to each other about bringing people together'* (TV)

To sum up, the cluster has clear benefits for its members, in particular knowledge sharing and possibilities for professional collaboration. It also fulfils an aggregative function for a sense of belonging that counteracts the risk of members' social and professional isolation, although, ultimately, no key benefits were found for a company or an individual employee/freelancer in their career progression.

A final note should be made on the cluster entry mechanisms. The Turin cluster presents itself as an open ecosystem and, as it is not rigidly and vertically structured, allows access from different channels. A student can already enter during the training course in schools, in particular in the last years of courses in the Polytechnic University or the Event Horizon School. By already creating micro-teams, stimulated by collective work as curricular tasks, it is possible to create both the first teamwork skills and an initial network of contacts suitable for the creation of a video game.

Interpersonal relationships are useful for joining the cluster network; however, they can also be created later. For instance, by participating in the various formal and semi-informal events (Tech&Tonic, Beer2Peer etc.), or by coming into contact with the various institutions/people present in the cluster. However, not being present in the Turin area, or not having integrated immediately into the ecosystem, can be an obstacle to inclusion in the cluster, resulting in a high degree of uncertainty. In fact, the already few job opportunities are thus further reduced, triggering strong competitive mechanisms, ending up forcing workers to look for job opportunities abroad: *'So there are three ways: either people just go and become freelancers, and start working for foreign countries, or these realities. And here in Turin we have some [...] Then you have those who move abroad. Or those who set up their company here. These let's say are...are the three...are the three things. Then, some talents are absorbed. Since the Event year I came from, and it will never be repeated in history, however, a good 50 per cent has been...everyone is working. Usually, in a design class, I can only give the design metrics, we're talking about one person in 10'* (JS).

Level of involvement	Mechanism/type of benefit	Level of benefit
Company level	Exchange of knowledge/information	Very high
	Exchange of skills/collaboration	High
	Exchange of resources (hardware/software)	Mid-high
	Exchange of labour contacts/human resources	High
	Exchange of specialists/professionals contacts	Mid
	Sharing common spaces/working environments	Mid
	Exchange of work commissions	Mid-high
	Logistical	Mid-high
	Market access	Very low/absent
(Other) Institutions level	Increase in student numbers	Mid
	Extension of actions and activities in the territory	Low
Individual worker	Access to the game development industry	Low
	Career path (finding/changing jobs)	Mid-high
	Salary (overall)	High
	Livability	High
	Sense of personal valorisation	Mid-high
	Solution to the sense of isolation	High

Table 6 – Stakeholders' benefits

5 THE BRNO CLUSTER

5.1 Data collection and analysis

CUNI conducted 25 interviews with various actors in the Brno video game ecosystem, developers for the large majority, policy makers, lawyers and people with various organisational roles. The analysis of the interview data was performed using a thematic analysis approach based on the project analytical grid from T3.1. Sixteen respondents were formally members of the Game Cluster organization, which represents the core community of the ecosystem. As the title of the organization overlaps with the term cluster used for our research, we will in the following sections specify whether we mean the cluster as an ecosystem or the Game Cluster as an organisation. For many of our respondents, these two entities overlap, highlighting also a strategic value for choosing this particular title for the organization as it comes to stand in for the entire ecosystem, lending legitimacy not only to the Brno developer community when negotiating with external stakeholders, but also to the organization itself as the official representation of that community. On the other hand, not all video game companies and other actors involved in shaping the environment in Brno are formal members of the Game Cluster, so this overlap is not absolute. For the respondents, it was also difficult to distinguish between the two entities—this was particularly evident in the description of specific activities, where it is often unclear whether they emerged within the framework of the Game Cluster, whether the Game Cluster supported them, or whether they were initiated by individuals and groups who collaborate with the Game Cluster but are not its members, or are entirely independent from it.

To describe the ecosystem in Brno, it is essential to emphasize the key actors involved. In Brno, a game cluster in the sense of an ecosystem was formed due to the concentration of video game companies and the creation of an informal network of contacts and mutual support. The industry cluster was consolidated in the 2000s following the international success of several games made in Brno such as *Hidden and Dangerous* (1999) and *Mafia: The City of Lost Heaven* (2002). First events started being organized in 2009, bringing together people from different companies and solidifying the ecosystem. As one of the cluster members explained: "*You could say that the cluster actually started functioning as early as 2009. Because cluster means organizing and carrying out various activities*." In 2015, key individuals first started discussing founding a formal organization, which would represent the cluster. In 2020, these existing networks were formalized with the establishment of a non-profit organization called the Game Cluster.

5.2 Cluster emergence & genesis

5.2.1 Local industry: Origins & historical legacy

Brno is the second-largest city in Czechia and according to industry statistics collected by the Czech Game Developers Association (GDACZ) it is also the second most important location for video game production in the country with 21% of Czech studios located there compared to Prague's 51%

(GDACZ, 2023). Brno has a long industrial history dating back to the 19th century, starting with the textile industry after which the city was given the nickname "Austrian Manchester" based on its location in the Habsburg monarchy (Vaishar et al., 2025). In the 20th century, Brno transitioned to machinery, including, for example, the gun manufacturer Zbrojovka Brno, and benefitted from the presence of technical universities. Manufacturing employment decreased significantly after the 1980s and Brno has shifted its focus to software development, also thanks to a major investment by IBM in 2001 (Ženka et al., 2017).

Figure 8 – Brno in Czechia

5.2.2 Collective actions: Initiating actors & first interactions

For an overview of the history of video game production in Brno see section 8.4. While the local industry has been established by the mid-2000s, the first attempts at formalising the cluster happened in 2015 during Game Dev Area Meetups. There were reportedly about 10–11 people involved in the foundation discussions, among them both the former and current chairmen of the Game Cluster, event organizers, teachers, and studio managers. Back then, the Brno game developer community was contacted by the South Moravian Innovation Centre (JIC) with the request to create an organisation with a more unified voice, this way joining together multiple stakeholders within the ecosystem, including not only companies, but also educators. JIC representatives also recommended using the term "cluster" for the title of the organization to signify the connection of local video game development studios. These discussions led to the establishment of the Game Cluster, which its members describe as a non-profit association. Among the primary reasons to establish the Game Cluster was to create a point of contact and an official representation of the Brno game development ecosystem, effectively a bridging institution that would bring together individuals from universities and smaller and bigger game studios.

5.3 Local industry features and components

5.3.1 Perimeter

While the Game Cluster organization as well as the overarching video game industry ecosystem is closely tied to the city of Brno, several members of the organization are currently living in Bratislava (the capital of Slovakia), Jihlava and Ostrava. As such, the organization's membership is not limited either by the borders of Czechia, nor the South Moravian region. Similarly, the Game Cluster features members from video game studios that have branches in Prague (i.e., Bohemia Interactive and Hangar 13) or most of their employees in Prague (i.e., Amanita Design, Czech Games Edition; Xzone as a game retailer is also mostly located in Prague). The Game Cluster organization further includes game developer from Redhill Games, (with studio headquarters in Helsinki, Finland) who, however, has long-standing work experience from Brno-based game companies. Some Game Cluster members moved to Prague to work for local game companies and remain members, while others commute to Prague for meetings. The Game Cluster membership is largely based on interpersonal relationships between members and willingness to cooperate on common goals rather than the place of residence. Through these personal connections the Brno ecosystem is connected to other localities of video game production.

Olomouc and Ostrava – two Czech cities that are geographically close to Brno – function separately in terms of video game production. Although VSB – Technical University of Ostrava already nurtures prospective video game developers, Ostrava's video game ecosystem is comparatively smaller to Brno, with only one major and established studio of Perun Creative being based in Ostrava. However, state initiatives such as business mission of game developers to Sweden (see section 5.5.3) or international events such as Game Access conference taking place in Brno usually bring these regionally diffused actors together. Additionally, the Game Cluster members can participate in individual activities in these regions, such as when acting as consultants for game jam participants in Ostrava (see section 5.3.4).

5.3.2 Demography of companies: number and kinds of companies

The Brno video game industry ecosystem is rather diverse in terms of the size and specialization of companies (see Table 2). Bigger studios focusing on PC and console game development (e.g. Ashborne Games, Bohemia Interactive, Hangar 13, Ingame Studios) coexist alongside mobile gaming companies (e.g. Alda Games, Nox Games) as well as indie collectives (e.g. Amanita Design, CBE Software) and individual developers (Jan Zelený). Furthermore, Czech Games Edition also bridges video game production and board game publishing. Based on our estimates, there are approximately 550–650 employees (including developers as well as support staff) in the South Moravian region's video game industry with most of them located in the Brno ecosystem.

Company name	Headquarters	Number of employees	Annual revenue2
Alda Games	Brno (CZE)	Approx. 30	10 million CZK (2019)
Amanita Design	Brno (CZE)	Not officially available	206,8 million CZK (2024)
Ashborne Games	Brno (CZE)	Approx. 50	Not publicly available
Bohemia Interactive	Mníšek pod Brdy (CZE)	Approx. 500 (Czech Republic, Thailand, Netherlands; approx. 120 in Brno)	1.4 billion CZK (2024)
CBE Software	Brno (CZE)	2	5 million CZK (2019)
Czech Games Edition	Praha (CZE)	Approx. 40 (25 in Prague and 15 in Brno)	Not publicly available

Giants Software	Zürich (Switzerland), branch in Brno (CZE)	Approx. 100 (approx. 30 in Brno)	Not publicly available
Hangar 13	Novato, CA (USA), branch in Brno (CZE)	Approx. 300 (approx. 80 in Brno)	Not publicly available
Ingame Studios	Brno (CZE)	Approx. 70	Not publicly available
Madfinger Games	Brno (CZE)	Approx. 80 (incl. external collaborators and remote workers)	50 milion CZK (2020)
Nox Games	Brno (CZE)	Small team, numbers not available	Not publicly available
Straitjacket Entertainment	Brno (CZE)	Less than 10	Not publicly available
Three Dragons	Brno (CZE)	Less than 10	Not publicly available

Table 7 – The list of companies represented in Game Cluster by individual members affiliated with these companies or as the so-called honorary members.

The Game Cluster organization brings together a community of nearly 40 members, encompassing game development professionals, educators, researchers, freelancers, and industry supporters. On the website of Game Cluster, they describe themselves as a "*non-profit association of people interested and active in the game industry in Brno and its surroundings*" (Game Cluster, n.d.).

To describe its members, it is important to emphasize the specific nature of the membership. All Game Cluster members repeatedly pointed out during interviews that they do not represent the companies at which they are employed but rather participate in the Game Cluster in an individual capacity. It can therefore be said that the cluster does not include companies as members, but solely individuals – at least formally. On the website, the Game Cluster itself notes that it "brings together" different entities but members themselves admitted that the way the Game Cluster is being presented (see the section Members on the website)3 can be confusing and may give the impression that certain individuals represent their respective companies. Nevertheless, companies are aware of and support their membership (the dynamics of this arrangement will be further explored in the following chapters). Some studios are in this way "represented" by multiple developers in the Game Cluster; Madfinger Games is the most represented company in this regard with three members of the Game Cluster employed at this studio.

In addition to regular members, the Game Cluster also designates honorary members—institutions and companies that have maintained long-standing collaborations or made significant contributions to the development of the local game industry. Honorary members include educational institutions such as Masaryk University and the Janáček Academy of Music and Performing Arts, major studios like Czech Games Edition, and public organizations such as Lužánky – Centre of Leisure Time. This honorary status acknowledges their historical role, influence, and continued support of the cluster's mission.

However, if we accept the simplifying premise that the members of the Game Cluster represent their employers in some way, the cluster organization comprises the following entities:

- Game development companies – they constitute most cluster members and range in size and scope (see below).

- Educational institutions – represented by Czech universities and secondary schools (see Table 6)
- Freelancers, and others, including legal advisors (Josef Bátrla), business representatives (XZone - Czech video games online store), event organizers (Gamer Pie organizer Jakub Špiřík), representatives of the VisionGame database, (Miroslav Žák), and community organizers (Natálie Sodomková for Gamebaze, Jakub Bedecs for Game Dev Area).

Institution	Description
FIT BUT	Faculty of Information Technology, Brno University of Technology
FFA BUT	Faculty of Fine Arts, Brno University of Technology
SŠUD Brno	Secondary school of Art and Design
FI MUNI	Faculty of Informatics, Masaryk University
FF MUNI	Faculty of Arts, Masaryk University

Table 8 – The list of educational institutions in Game Cluster

Looking at the individual membership, women are significantly underrepresented. Only a few identified female members — such as coordinator Vendula Hromádková, Anežka Seberová (QA Lead at Czech Games Edition), and Natálie Sodomková (Gamebaze) — stand out, reflecting a broader gender gap that persists both globally and within the Czech video game industry. Women make up roughly 2–3% of the visible member base, underscoring the ongoing challenge of achieving gender diversity. In this regard, Game Cluster mirrors the wider trends in the Czech gaming sector. According to the Czech Game Developers Association's 2024 report, women account for circa 19% of the workforce — a slight increase compared to the previous year.

The video game ecosystem in Brno is characterized by a diverse concentration of gaming companies and institutions that contribute to a network of collaboration, innovation, and growth. While the Game Cluster as an organization represents a formal structure, many key players in the Brno gaming scene are not members of this specific cluster. Some notable companies and institutions in the Brno gaming ecosystem include:

- Glassbead Games – a studio specializing in the development of games focused on artistic and interactive experiences. This studio plays a significant role in the Brno gaming scene but is not part of Game Cluster.
- InnoGames Brno – part of the international network of game companies with a branch in Brno, though it is not officially a member of Game Cluster.
- GameFan – a Czech distributor of games headquartered in Brno, but not a member of Game Cluster.

These companies and institutions play an important role in the gaming environment in Brno but remain outside the formal structure of the Game Cluster.

5.3.3 Institutional support

The Game Cluster and the ecosystem have received institutional support from municipal authorities, regional offices, and the regional innovation agency called South Moravian Innovation Centre (JIC).

Cluster organization is also in close cooperation and communication with universities and secondary schools in Brno and its vicinity.

Within Brno City, the Game Cluster members collaborate with city officials from the Strategic Development and Cooperation Department. For example, events organized by the Game Cluster members, such as local industry conferences Game Access and GameDev Connect, and the local exhibition called *30 Years of Game Development in South Moravia* were all co-funded by this department. Game Access and GameDev Connect conferences receive continuous funding from the Strategic Development and Cooperation Department along with other events taking place during the yearly festival Brno Creative Days. The exhibition about the 30-year history of South Moravian game development received partial funding from the grant program Creative Brno, with Game Cluster members covering the mandatory costs of the exhibition. The municipal support of Brno game development is thus established based on creative industries' support.

Game Cluster members also cooperate with the Regional Office of the South Moravian Region. Together with the Brno municipality, the regional office partially funds the Game Access conference, too. Among the notable collaboration projects of Game Cluster with regional authorities is the establishment of the game development program "Game Art" at the Secondary School of Art and Design (SŠUD). As part of the Regional Action Plan for Education under EU subsidy, the Game Art program was funded and later opened in 2021. The Education Department of the Regional Office was also co-funding and co-organizing secondary school's reconstruction and approximately the first two years of the Game Art program operations. Such a high level of regional support is helped by the fact that the Secondary School of Art and Design is an educational institution established by the South Moravian region. Nevertheless, communication between the Regional Office and Game Cluster members regarding other issues usually happens through the South Moravian Innovation Centre as an intermediary.

South Moravian Innovation Centre (JIC) is among the other stakeholders that collaborate with Game Cluster. JIC is a regional innovation agency founded in 2003 by the City of Brno together with the South Moravian Region and Brno universities. JIC employees were important contributors in establishing Game Cluster as an organization. JIC rents the KUMST building in Brno which provides workspaces and offices for game developers and other creative workers. KUMST building hosts meetings of Game Cluster and includes Gamebaze, which is currently two rooms with an incubator and co-work for game developers. JIC was employing two Gamebaze employees – both members of Game Cluster – to take care of the Gamebaze organization. JIC employees themselves provide business mentoring for prospective game developers in the incubator. Through Gamebaze, JIC thus supports the emergence of smaller game development teams and startups within the Brno cluster.

Regarding the cooperation with educational institutions, game developers from Game Cluster often teach at schools and mentor students during game jams in Brno or in nearby cities of Dolní Morava or Ostrava. Managers of bigger studios such as GIANTS Software or 2K Czech also provided necessary hardware equipment to SŠUD or Gamebaze or internships to teachers, to teach them game development skills.

The general sentiment of many of the interviewed Game Cluster members is that this organization is much more active on a local and regional scale than GDACZ, especially when it comes to game development education. GDACZ was often framed as a more state-based and lobbying organization and so the goals of both organizations do not fully overlap. "*The GDACZ focuses on the macro level—talks with chambers, negotiates with ministers. That's extremely important work, and it's something we in Brno aren't even able to do. So we wanted to connect with the authorities in Brno and the South Moravian Region to drive change locally, because our studios operate here*," said one of the respondents regarding the difference between GDACZ and the Game Cluster.

GDACZ is cooperating with Game Cluster in various areas. GDACZ connects Game Cluster with other game industry associations, co-organizes business trips of Game Cluster members, communicates their needs to various Czech ministries (e.g. Ministry of Foreign Affairs), and organizes exhibition stands (not only) for Brno game companies at international conferences such as Gamescom. Finally, comments on Audiovisual Law were provided both by GDACZ and Game Cluster members (see section 5.4.2), with GDACZ here acting again as mediator of communication between game developers, politicians or lawmakers.

5.3.4 Cluster «DNA»

The cluster is diverse in terms of the company size and market orientation. Based on our interviews, the DNA of the Brno ecosystem is its communal collaboration based on volunteer labour with an emphasis on informal relationships between the various actors. While there is an organization representing the ecosystem, its governance does not follow any strict hierarchical structure, and it is instead based on voluntary contributions of its individual members. This role of the Game Cluster organization can be illustrated on the officially stated 4 main goals according to the official website:

1. "Mutual communication and cooperation between game developers and companies
2. Talent entry into the industry – information, database, internships, incubators
3. Support for education – schools, courses, retraining
4. Raising awareness of the importance of games, promotion of game development professions" (*Game Cluster*, n.d.)

In addition, The Game Cluster provides expert consultancy, represents the sector at international events, and facilitates connections between the gaming industry and regional/state authorities.

In the interviews, all four main goals mentioned above were emphasized. According to the members, the primary significance of the Game Cluster is that it serves as a network that bridges and connects individuals, studios, and organizations across segments of the game development ecosystem (goal 1). In practice, it means that the Game Cluster offer a database of contacts that simplify the communication and the fluctuation of the employees: "*I mostly think that the cluster is a great database of knowledge,*" said one of the respondents. "*There are people who've been doing this their whole lives, people who've been doing it for a short time but recently studied it, so they know other people and see things from a different perspective. And when someone asks about anything, they will receive a bunch of opinions on whether it's a good idea or not, and how it could be done. And many contacts, I know someone, I can talk to this person or that person*." As an outcome, the Game Cluster serves as an institutional contact point for other entities and help to bridge them together (goal 2). "*We need interesting stories from game companies, so it's easier to have the Cluster as a partner rather than dealing with individual companies. We have the partner to reach or who will help us to find what we need*," explained the representative of the JIC.

As explained in the goal 3, the education of future game developers and retraining of the present ones is the most important. The Game Cluster contributes to the ongoing training of current developers and the cultivation of future generations of professionals. This means not only running an incubator for new game developers but also giving guest lectures at universities and actively involving students in the game development scene in Brno (more on this in the following section). In addition, the Game Cluster creates space for open discussion of the industry's challenges, including structural issues such as crunch culture and gender-based discrimination.

One of its key contributions is enhancing the public perception of games, particularly in Brno, and promoting broader awareness of the cultural and economic value of the game development industry (goal 4). As stated by one of the respondents "*the Game Cluster is a way to connect with other game developers and work on making things better for games in Brno in general. And not just in Brno, but ideally in the whole Czech Republic*."

All the mentioned pillars contribute to the unique DNA of the Game Cluster, a quality often emphasized by its members when comparing it to similar initiatives. What sets the Game Cluster apart is its strong sense of community, driven by informality and voluntarism, which fosters a friendly, collegial atmosphere unlike more formal professional associations. Unlike many organizations, the Game Cluster operates without mandatory membership fees, with a foundation built on voluntary participation.

Its activities are propelled by highly motivated individuals who are not only influential in the Brno game development scene but also contribute their time and energy outside of their professional responsibilities. As an outcome, specific activities are funded by voluntarily paid fees (the amount is not specified and the payments are not monitored) or donations from individual companies, which either support the cluster directly or cover the costs of specific events upon request. However, it is quite common that these active individuals who either helped establish the cluster or are currently among its most active members—end up covering many of the expenses themselves. "*I think it's really about that willingness not to bring money into everything, but to focus more on the meaning of the thing. And if there's a financial loss, just take it on a personal level as kind of an honour — like, okay, this month I'll cover the rent for the event, next month maybe someone else will. That's just how it is*," said one of the cluster members.

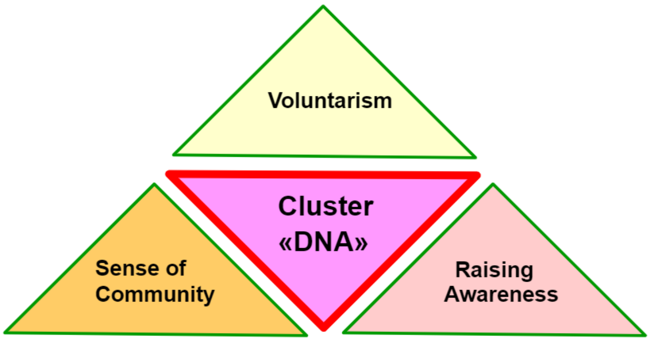

Figure 9 – Brno cluster DNA

This combination of informality, voluntary engagement, and personal initiative is central to the cluster's identity and success. It stands in contrast to the lack of similar initiatives in other major Czech cities, such as Prague or Ostrava. As one respondent pointed out: "*I know there's Game Beer in Prague too, but I feel like the one in Brno is a bit more informal in how it's organized and more open to people who are maybe just trying to get into the scene*." Therefore, the cluster's character is shaped by Brno's genius loci, where the city's strong sense of community and informality continuously supports and reinforces the cluster's activities, creating a dynamic and collaborative space for game developers in the region (see also Vaishar et al., 2025).

These specific features of informality, community orientation, and voluntarism are also reflected in the wording of their code of ethics. According to the code, Game Cluster is a *"voluntary association established to promote gaming development in the region. In a unique way, it enables people from different areas of game development (commercial, education, art, technology, authorities) to meet and collaborate"* (Ethical Code, 2025). It emphasizes the *"honesty"* and importance of the co-creation of the shared game development ecosystem. In addition, it emphasizes the importance of in-person meetings, that are *"always better and more valuable than electronic conversations"*. The code of ethics emphasizes that members are committed to collectively creating a shared and supportive ecosystem, with a strong emphasis on non-competitiveness and mutual support.

5.4 Cluster evolution

5.4.1 Critical moments and phases

The evolution of the cluster (ecosystem) can be divided into the following five phases (see Figure 1): (1) mainframe and minicomputer era (until the early 1980s), (2) the amateur phase (in the 1980s, bleeding into the early 1990s), (3) the local and regional market-oriented commercial phase (in the mid-1990s), (4) the professionalization phase (late 1990s to early 2000s), and (5) the consolidation phase (mid-to-late 2000s). However, these phases often overlap. For instance, amateur game-making continued throughout the later decades but was overshadowed in its cultural and economic impact by commercial production.

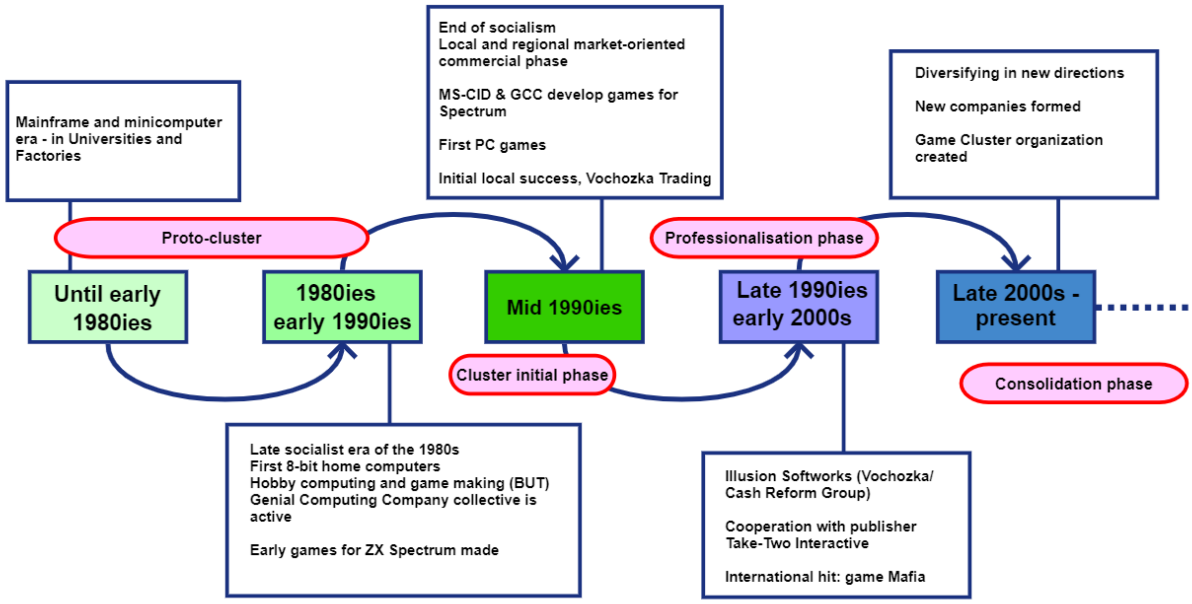

Figure 10 – Timeline of Brno video game industry evolution

It is very likely that the first people to play and program digital games were the programmers and operators of mainframe machines, stationed in Brno's universities, factories, and institutions since at least the 1960s (Blatný, 1985). However, none of these games have survived. During Czechoslovak late socialist era of the 1980s, first 8-bit home computers like the Sinclair ZX81 and the Sinclair ZX Spectrum started arriving in the city, many of them through individual importing from Western Europe, because home computers were only rarely available through retail channels (Švelch, 2018). In the 1980s, most hobby computing and game making took place in computer clubs and collectives and depended on bottom-up activities of local hobbyists. An important early hub was at the dormitories of the Brno University of Technology (BUT), where a group of students were exchanging and playing games. One of the earliest preserved Czechoslovak games is a conversion of the ZX Spectrum game *Manic Miner* to the earlier ZX81, programmed by the BUT student Aleš Martiník. Another BUT student, Petr Mihula, was an active developer of ZX Spectrum games, making among others the popular text adventure Rychlé šípy (1988), based on a popular Czechoslovak comic series. He often worked with his younger brother Ondřej, forming the productive software development duo MS-CID. As computers became more available throughout the 1980s, they got into hands of younger kids, who also engaged in building their networks and communities. One of them was GCC (Genial Computing Company), a loose collective of middle school friends from the center of Brno, who, starting in 1989, ran an impressive hand-made fanzine, created with ball-point pens and felt-tip markers, and bound by needle and thread. Some of the collective's members also made amateur games.

After the Velvet Revolution in 1989, it became possible to get one's game distributed commercially. Both Mihula brothers and GCC joined the ranks of Czech and Slovak developers who licensed their games for the Sinclair ZX Spectrum to upstart publishers like Proxima (based in the North Bohemian city of Ústí nad Labem). The royalties provided a decent side income for the student authors but did not yet suffice for professionalization. At the same time, many enthusiasts started to make games for the MS-DOS equipped PCs. An important hub of activity was an after-school computer club at the high school on Slovanské náměstí. Among the attendants were the GCC alumnus Pavel Pospíšil and two younger kids Jaroslav Kolář and Petr Vlček, who called themselves Pterodon Software. While working on their new games, the three young men helped each other out but also engaged in friendly competition. Pterodon Software created the PC point'n'click adventure The *Secret of Donkey Island* (1994), a spoof of Lucasfilm's Monkey Island games. Pospíšil, joined by a group of other high school and university students from Brno, designed and directed the fairy-tale adventure *Dragon History* (1995). Both games were published by the budding entrepreneur Petr Vochozka, who had run his company Vochozka Trading from a small town of Polička before moving to Brno in 1995. The games had their flaws but – in part thanks to humorous dialog in Czech – found success on the local market, enabling Vochozka to attract more talent.

As development costs rose because of advancing hardware, it became apparent that local developers must address international markets to turn profit – but making games that would be competitive abroad required significant investment. In August 1997, Vochozka joined forces with the local venture capital company Cash Reform Group and founded the development studio Illusion Softworks, gathering some of his old collaborators and inviting new ones through magazine ads (Smolík, 1998). This was a key moment that brought numerous talented people into Brno and into game development. Moreover, Vochozka managed to establish a fruitful publishing cooperation with the U.S. publisher Take-Two Interactive, which was currently expanding and on the lookout for quality games. Illusion Softworks scored a minor international hit with the 3D tactical shooter *Hidden and Dangerous* (1999), whose production value was described by a local magazine as "absolutely unbelievable by Czech standards" (Smolík, 1998, p. 25). Closely collaborating with Illusion Softworks, the studio Pterodon, headed by Jaroslav Kolář, also made games for the global market, including *Flying Heroes* (2000) and Vietcong (2003). In 2002, Illusion Softworks gave Take-Two a major international hit in Mafia (2002), which enabled Illusion Softworks to expand and continue funding other associated studios, some of the outside Brno. It is important to note that Illusion Softworks and Pterodon were not the only successful Brno-based studios. A smaller studio called Altar Interactive focused mostly on puzzle and strategy games, releasing the cult favourite real-time strategy title Original War through the British publisher Virgin (2001) and later working on the UFO series, inspired by but not identical to the X-COM series.

Around 2004, Illusion Softworks consolidated their efforts into the Mafia console ports and sequels. This happened for several reasons, including the internal restructuring within Take-Two, which made it more difficult to pitch new projects. This emphasis continued after Take-Two's purchase of Illusion Softworks and the studio's rebranding as 2K Czech in 2008. Nevertheless, *Mafia II* (2010) turned out to be a difficult project, consuming a large amount of time and resources. The focus on the Mafia series also meant that other projects were cancelled, encouraging some employees to leave and form new companies, such as Vatra Games (who went on to release *Silent Hill: Downpour* in 2012). At the same time, the industry was diversifying in new directions. Upstart studios like Hammerware and Noxgames grew out of the online downloadable and Flash-based games scene and the latter found success in the mobile sector. By the late 2000s, the video game industry ecosystem in Brno has been established with new studios forming around the aforementioned key companies. As mentioned, the formal institutionalization of the ecosystem in the form of the Game

Cluster organization happened in 2020, but this initiative was built on the existing professional networks dating back to the 1990s and even earlier if we consider the hobbyist beginnings of the Brno video game industry.

5.4.2 Evolution curves

Throughout the years, the Game Cluster has admitted new members and has grown to about 40 members. The nature of the organization's membership has also changed significantly. While in the beginning, the Game Cluster members were usually senior game developers from more established studios, over time, the Game Cluster has admitted members from smaller indie studios and mobile game studios. On the other hand, university teachers were among the founding members of the Game Cluster, proving that the organization has seen game development education and its betterment as its defining goal since its inception. As the chairman of the Game Cluster put it when describing the group's composition: "*We used to meet relatively regularly and in quite an interesting group. People who work in the industry as professionals would come. There were teachers, and event organisers. And we started talking about wanting to do something to help the gaming industry thrive here in the region.*"

Outside of the general diversification of membership over time, no major fluctuations in the Game Cluster membership were noted by our respondents. While members can become inactive due to the intensive stage in game development, they do not stop being members – they often revisit the Game Cluster meetings when things in their workplaces get calmer.

The major change in the Game Cluster activities that was noted by our respondents was the transformation of an informal network into a more formal institution. It is important to note that this does not include changes in the organization's ethical code or in the internal functioning of the Game Cluster – they both remained largely informal. It relates more to the scope of activities Game Cluster has recently been involved in, which has prompted our respondents to speak about the changes in the Game Cluster. Comments and objections on the Audiovisual Law raised by the Game Cluster members were identified as a defining moment when the Game Cluster moved from discussing more locally oriented, smaller-scale themes to more state-oriented and large-scale issues. While some respondents have seen this transformation as natural and as part of the Game Cluster agenda since its beginnings (as it has never been limited only to Brno game development ecosystem per se), others would see it as a move to uncharted territory of state lobbying that was not on the agenda of the Game Cluster initially. "*We might be witnessing the end of a golden era—the era of willingness to contribute to the ecosystem. As growth becomes necessary, especially in the sphere of education, it will likely become harder to maintain that nonprofit drive. And at some point, that might even become an obstacle*," a cluster member explained. In fact, the Game Cluster was in part established as a response to a national organization of the Czech Game Developers Association (GDACZ), which is a lobbying body, representing selected Czech-based game studios as its members. Also, compared to GDACZ, membership in the Game Cluster is not paid.

5.4.3 Major factors of change & growth

Among the essential factors behind the emergence and growth of video game industry cluster in Brno (in the sense of the ecosystem) is the existence of established local universities. Brno has 33 faculties in 13 institutes of higher education and about 89,000 students. Among the prominent universities are Masaryk University (MUNI; primarily Faculty of Informatics and Faculty of Arts) and Brno University of Technology (BUT; primarily Faculty of Information Technology and Faculty of Fine Arts). Both universities provide courses on game design or game programming. Thus, the Brno video game industry ecosystem has direct access to educated graduates, who are more likely to stay in the city because of many game career opportunities, leading to talent retention within the cluster. Additionally, due to its proximity to densely populated parts of Slovakia, the Brno game cluster also draws in Slovak talent. Our respondents represent these qualities of the local ecosystem and its geographical location, as three of them are Slovak, and as one of our Slovak respondents is even among the founding members of the Game Cluster organization. Furthermore, we also had respondents who have moved from nearby cities (e.g., Jihlava, Ostrava, Zlín) to Brno, proving that Brno is an attractive city for game professionals.

As mentioned, Brno has a long history of manufacturing industries with established and long-standing support for technological innovations. However, most of the heavy industry disappeared from the city in the 1990s and was replaced by light industry and IT professions. As one of the respondents highlighted: "*In the 2000s, the status of the city shifted away from manufacturing towards sectors that generate much higher added value, and the game industry naturally became part of that shift*." As such, Brno is currently home to various branches of international IT and software companies such as IBM or Red Hat, and the local game industry can thus benefit from workers with shared knowledge and skill overlaps. Alongside the video game industry ecosystem, Brno, for example, hosts the Czech National Semiconductor Cluster or the Brno Space Cluster.

Since the establishment of the South Moravian Innovation Agency (JIC) in 2003, public support for growth of new innovative firms in Brno was included in the first regional innovation strategy. According to JIC representative Radim Kocourek, initial growth of local cluster of innovative firms has not been supported by international subsidies such as EU structural funds, which "forced" the essential actors behind regional innovation strategy (local politicians, city and regional officials) to cooperate. The Game Cluster as an organization thus did not receive any state or international subsidies for its initial functioning but was founded rather organically, with the establishment of the organization on top of already existing community – which, according to Kocourek and many Game Cluster members, also led to successful founding of the organization.

Communication between local game industry representatives and JIC, initially concerned with the goal of mapping and understanding of game industry clusters, started in 2005. Another institutional actor involved in this communication was CzechInvest, state-funded agency which supports existing and new entrepreneurs and foreign investors in Czechia. CzechInvest employees provided documentation and in-person consultations about clusters to founding members of the Game Cluster organization. Despite not receiving any state subsidies, the Game Cluster thus still received important know-how for its establishment from state actors.

Lastly, although being the second-largest city in Czechia and an important secondary location of Czech game development after Prague, our respondents often noted how compact and concentrated the local game industry is compared to the nation's capital. They saw the Brno game ecosystem as more diversified than in Prague, noting the diverse co-existing actors within Brno: subsidiaries of international conglomerates like Take-Two or Embracer Group, but also many Czech-owned studios as well as indie and mobile game companies with comparatively smaller teams. In comparison, the Prague game ecosystem was seen by respondents as largely driven by dominant industry incumbents. As one respondent described these differences: "*In Brno, we have a lot of indie studios. Prague, from what I've observed, feels a bit more monolithic. There's the big Warhorse, the large Bohemia Interactive, team that made Factorio and a few smaller ones. But I feel like there aren't as many indies as we have here in Brno—or at least they're not as visible*."

The Brno cluster was also identified to be friendlier and more communal than the Prague game ecosystem. Respondents often noted differences in the organization of game meetups (called Game Dev Area Meetups in Brno), which are thought to be more corporate-driven within Prague.

The Game Cluster organization further simplifies and facilitates game development cooperation between studios. "*Let's say some game studio has a project and some other studio within Game Cluster expresses interest in it. It can range from porting to DLC creation*," explained a respondent. When seeking additional game development support, smaller indie game developers can thus use the Game Cluster network to find development assistance or guidance. Existing diverse game ecosystem also facilitates employee mobility and fluctuation between numerous Brno-based game studios. According to our respondents, employee mobility is quite common and can happen in different stages of the project. The aim of company management and recruiters is to not damage other projects by "pulling over" employees. Reportedly, the usual practice of company management of both affected studios is to informally discuss the recruitment of new employees. Although such strategy is thought to ease up the impact of employee mobility between Brno-based companies, especially our international respondents highlighted how it can lead to "conservative hiring" driven by referral networks and nepotism, with "unknown" candidates with not-yet established social networks excluded from the pile of potential job candidates.

Nevertheless, more senior respondents (such as managers of local studios) and international game workers frequently identified negative sides of living in Brno. International plane connections to other European cities and public transport in Brno were said to be worse than in Prague. "*Air travel options are also more convenient from Prague. These factors could influence companies that are seeking a more international location than Brno,*" a respondent said.

Overall, Brno was described as a less attractive location for expatriates. Inaccessible housing and relatively high rents within Brno proved to be a hindrance to the retention of both local and international talent too, especially among those with families. On the other hand, support for expatriate workers is long-established via the Brno Expat Centre, which has about 80% of operational costs covered by Brno municipality and which helps skilled foreign professionals and their families to settle in Brno.

5.5 Collective actions

5.5.1 *Main activities & collective actions*

One of the most prominent and most frequently mentioned events supported by the Game Cluster is the Game Access Conference, an internationally recognized gathering of game developers, industry professionals, and enthusiasts. Held annually in Brno, the conference features lectures by leading experts, showcases of indie games, and provides numerous opportunities for professional networking. Organized officially by GameDev Area, a close partner of the Game Cluster (represented in the Game Cluster by Jakub Bedecs), the Game Access Conference is considered a cornerstone event for strengthening professional networks within the Czech and international gaming communities. Similar to the Game Cluster values, the Game Access Conference is based on informality and community which, according to the respondents, distinguishes it from GDS, a similar event organized by GDA in Prague. "*It was a pleasant surprise how people talk in such a friendly tone about something they're working on. And it's so face-to-face, the people are really on a personal level, and it's a community I didn't know I was missing. But it's really nice*," said one of the respondents.

Another important initiative is Gamer Pie, an event organized by a member of the Game Cluster aimed at fostering a deeper understanding of video games within the local community. Founded in 2015, Gamer Pie hosts an annual festival in Brno with lectures, workshops, and discussions highlighting the cultural and social aspects of gaming. It also includes game jams and quizzes, promoting collaboration, creativity, and informal education. As part of the Game Cluster's activities, Gamer Pie plays a vital role in nurturing local talent and strengthening community ties.

Third activity that was mentioned often is Gamebaze, a game development incubator and coworking space located in Brno, Czech Republic. Established to support game developers and foster the growth of the regional gaming industry, Gamebaze offers a collaborative environment for both emerging and established creators. Located within the KUMST creative hub operated by JIC, this further strengthens the cooperation between the Game Cluster and JIC (see in 5.3.4).

Focusing more specifically on early-stage education and student engagement, the Game Cluster supports initiatives like Festival Lektvar, dedicated to showcasing student games and providing young developers with valuable feedback and industry exposure. Collaboration with educational institutions such as the Secondary School of Art and Design (SŠUD) Brno also reinforces this focus: SŠUD offers a specialized Game Art program and maintains a close connection with the Game Cluster through its representative Filip Dufka. The Game Cluster further contributes to education by organizing lectures, facilitating internships, and maintaining an active database of internship opportunities.

In terms of public visibility and game promotion, the Game Cluster has supported several exhibitions in collaboration with the City of Brno. Events like Brno – The City of GameDev, Herní Brno – 30 Years of Game Development in South Moravia, and Herní Kompas at the KUMST creative hub bring gaming culture into public spaces, raise awareness of the local industry, and showcase the creativity and innovation of the Brno game development scene. These activities help position Brno as a dynamic gaming hub both domestically and internationally.

However, respondents considered discussions and official statements regarding the amendment to the Audiovisual Law as a key and defining activity. For the first time, video games were formally included alongside film and television in Czech legislation, triggering strong reactions from game developers concerned about the law's shortcomings. Throughout 2024, the Game Cluster took an active role in these discussions — starting with internal debates and later collaborating with GameDev Area in visits to the Chamber of Deputies and meetings with MPs. In October 2024, the Game Cluster issued its official "Statement on the Amendment of the Audiovisual Law," positioning itself as an influential voice in political and societal debates.

This move was seen by many members as crucial for the cluster's institutionalization and professionalization. "*Audiovisual Act discussion was moment where the cluster really plays an important role. Because the fact that people are willing to go there and explain what the game industry actually is, how game development works and all that—that way they can help sort of shape the whole conversation*," said one respondent. Thanks to its lobbying efforts, key changes were made to the amendment, including the explicit recognition of video games as audiovisual works eligible for state funding and the transformation of the Czech Film Fund into the broader Audiovisual Fund, opening space for gaming industry representation. The amendment, now awaiting final approval, is widely regarded as the Game Cluster's greatest success to date. As a respondent, who took an active role in these negotiations, put it: "*I think the amendment to the Audiovisual Act showed that the voice of the cluster carries weight, because many of the suggestions that were submitted came from the Game Cluster and ended up having an impact*." However, the frequent mention of this influence as the greatest success of Game Cluster must be attributed to the fact that the interviews were conducted during the period when the Audiovisual Law was being discussed.

The discussion about the Audiovisual Law and the role of Game Cluster in it was groundbreaking for many members. It not only showcased the naturally growing professionalization and institutionalization of the cluster but also its increasing influence. It marks an important precedent and milestone in the development of Game Cluster towards becoming an influential, even lobbying, organization. According to the respondents, Game Cluster demonstrated that it has a voice capable of influencing the decisions of other actors.

However, this influence is still mainly limited to the Brno and, by extension, South Moravian context. Therefore, Game Cluster cannot yet be perceived on a national level, despite being the only gaming cluster currently existing in the Czech Republic.

5.5.2 Stakeholders' motivations and benefits

We have described many of the motivations and benefits above, in this section we will therefore highlight challenges to the motivations and benefits. Ironically, some of them are caused by the very uniqueness of the cluster, especially meaning the organisation, but the ecosystem by extension, too – its informality, lack of institutional structure, and strong sense of community. One of the main issues is the presence of inactive members, which causes difficulties during voting processes and leads to dropouts due to crunch periods or personal reasons. There is no consensus within the cluster on how to address this situation. The cluster is currently discussing the introduction of a two-tiered fees system that would differentiate between active and passive members, but as has been emphasized, this is not a priority. However, there is a clear desire on the part of some members to lead the cluster towards institutionalization and professionalization, while others remain an informal grouping without any stable funding.

Another problem is the inactivity of the Game Cluster, respectively different ideas of individual members about how "loud" and incisive it should be. While one group of members is convinced that the Game Cluster should remain a voluntary informal network, another group is convinced that it should be more active, more publicly visible and perhaps even more critical. "*I think it's wrong to passively wait for them to recognize how awesome, great, and important we are. It's necessary to get up and tell them that's the way it is. That's the feeling I sometimes had in those discussions*," argued one of the respondents. "*I just wish people would stand up for themselves more,*" added another respondent. "*I'm not looking for fights, but I'm used to questioning things and checking if they make sense. Here, everyone's more like, 'better not upset anyone.' They're scared of making someone mad, even though the critics don't really care. I don't blame them, but I'd love to see a bit more boldness in the community*."

Part of this perspective is the idea of whether the Cluster should start functioning as a lobbying organization. By declaring the Game Cluster's position on the upcoming amendment to the Audiovisual Law, the Cluster has set a relatively important precedent, and it is evident that some members would like to continue this path of the Game Cluster as an influential organization with an opinion. However, the second group of members does not see the point in this approach and still understands the Game Cluster more as an informal network of contacts and an association of volunteers. Some respondents also pointed to the differing motivations and perspectives among members, including the contrast between large and small companies, indie and mainstream developers, as well as the distinction between paid and voluntary memberships.

In addition, ineffective external communication was also highlighted, as many are unaware of how the Game Cluster operates. This, in turn, affects engagement and participation. As an outcome, there is limited collaboration with other institutions, such as the GDA, which hampers the Game Cluster's potential for growth and networking.

The last issue with Game Cluster is the feeling among some people outside it is "saturated." This concern was expressed by respondents who aren't formal members of Game Cluster but are still active within the Brno scene and, in that sense, connected to the cluster. They feel that there is no need to join the cluster anymore, as all the issues and agenda have already been covered. As a result, they believe they have "nothing to offer" to the cluster and are not motivated to join. "*I'm totally cool with not being in the cluster — I know there are people there who've got it covered. Feels like the right people are in the right place, so I don't feel like I need to be part of it*," said one of the respondents who was not an official member of the Game Cluster. It can be assumed that the duality between Game Cluster and the gaming cluster as an organization will not disappear anytime soon. Rather, after a phase of some overlap, it is likely to solidify further.

It is important to emphasize that none of these issues were perceived as fundamental or impacting the functioning of the cluster. Except for member inactivity, none of the problems were expressed by the respondents themselves, but only after the question was asked whether Game Cluster had any issues.

5.5.3 Networks & collaboration: structural features

Only few appointed members of "promotional group" within the Game Cluster partake in networking and collaboration and represent the organization to external stakeholders. Among them are Jakub Bedecs, Zdeněk Záhora, or current chairman of Game Cluster Roman Hladík. Since the Game Cluster does not see itself as a lobbying group, its external collaborations usually happen on a voluntary and project basis. Apart from more local based cooperation already mentioned in section 5.3.4, the Game Cluster cooperates with outside and international stakeholders on various projects.

Among notable examples of such cooperation was a business mission of some the Game Cluster members to Sweden in 2022, co-organized by GDACZ together with Czech embassy in Sweden and under the patronage of the Ministry of Foreign Affairs of the Czech Republic (Bašta, 2022). The Game Cluster members together with JIC employees and game developers from other Czech regions visited game incubators in Linköping and Skövde to gather experiences. According to Jakub Bedecs, Gamebaze incubator and co-work took some inspiration from both abovementioned incubators, and additionally from another Swedish game incubator in Malmö. Although the Game Cluster members continue to partake in business trips to other, usually European countries (e.g. Austria, Poland), such trips are sporadic as the members do not have any organization budget, or allocated time to visit other countries or game clusters abroad.

5.5.4 Mobilized resources & competencies

In the Brno game development ecosystem, key resources and competencies are mobilized through a combination of public support, association activities, and voluntary contributions. A major role is played by JIC, which provides infrastructure, networking, and professional support to the local creative industries, including gaming. The Game Cluster further strengthens this environment by connecting developers, organizing events, and advocating for industry. Many activities, such as networking events, workshops, and mentorship programs, are driven by the voluntary engagement of industry professionals, who contribute their time and expertise without direct financial compensation. This combination of institutional support and grassroots commitment is essential for sustaining and developing the local ecosystem.

5.5.5 Coordination & control formal structures

As mentioned, the Game Cluster operates on a voluntary basis – members do not pay any membership fees, and their relationship is not formalized. The cluster collects voluntary membership contributions and donations, from which it covers fees for individual activities and the salary of the cluster's only paid employee – the coordinator. The coordinator has a part-time contract (DPP), with the workload corresponding to a half-time position. However, even the cluster coordinator emphasized that it is the informality and friendly atmosphere that motivate her to do the job, not the salary, which she describes as standard: "*I didn't take the job primarily for the money, but more to meet new people and get somewhere different, so the benefits are really more about that than about finances. Honestly, to tell the truth, I'd probably do it even for free*." The only other formalized member of the cluster is the chairman. According to the cluster's statutes, which are registered as an association, the chairman is elected for a specific term.

The Game Cluster meets once a month in person at the KUMST building or at a restaurant. The agenda for these meetings is gathered between the individual meetings, though many matters are resolved per rollam (by letter). The coordinator is responsible for creating and circulating the agenda. In terms of internal communication, the Game Cluster communicates via Discord, where several channels are set up according to the agenda (PR activities, core, meetings, various, etc.). Voting on various matters takes place via Discord using emojis, which again highlights the informality of the Game Cluster, something its members repeatedly emphasize. In the context of external communication, the Game Cluster has two official email addresses (a general email and the chairman's email), which receive various collaboration offers and inquiries. It is the coordinator's task to distribute these emails to the individual members. Additionally, the cluster has a website, Instagram, and sends out newsletters – they have published 4 so far on approximately annual basis.

As mentioned, the members of the cluster are individuals, not companies. Therefore, members do not officially "represent" their company, and the company does not make a statement about being a member of the Game Cluster. However, in most cases, as respondents said, the company is aware that their employee is a member of the Game Cluster and silently agrees with this and with the Game Cluster's objectives. This setup tends to reinforce inequalities among the cluster's members – as stated by many members, some of them are also owners/CEOs of their companies and thus have essentially decision-making power – they can immediately decide for the whole company whether to get involved in something or not. Other members then act as a bridge – they communicate the ideas within their companies, and their decisions are communicated back. Although this situation could hypothetically reinforce an implicit hierarchy between regular employees and top managers, according to the cluster, nothing like that occurs. What is noticeable is the hierarchy in terms of influence between the founding members of the cluster and senior members who have been in the gaming industry for a long time, compared to newcomers. However, younger members do not consider this hierarchy unjust, but rather natural.

New members can apply to the cluster via a contact form. After that, a series of personal meetings follow, during which the cluster members consult with the potential member about joining. From the conversation, the applicant should be proactive and clearly demonstrate how they will contribute to the cluster. Then, the cluster members vote on whether to admit the applicant. If even one member is against it, the applicant is not accepted into the cluster. According to conversations with the Game Cluster members, this situation occurred once – a potential member was not accepted because some members had poor personal experiences with her. In general, there are no specific requirements for what the applicant must meet or, conversely, which entity or institution cannot be a member. There is also no maximum number of members from one company – for example, Bohemia Interactive currently has 2 members in the Game Cluster.

Projects that will be organised or supported are selected organically. Anyone can propose it via Discord or during the meeting. It’s assumed that the person proposing it will be involved in making it happen, along with a few others who join in. “*If some money is needed, we write a little draft stating how much money we need. And if the money comes together, we go ahead. If not, then we don’t*,“ one of the Game Cluster members explained. This approach naturally filters the events that various cluster members (members of industry, educational institutions, etc.) are not interested in and are therefore probably not that important for the Brno ecosystem. None of the respondents were aware of whether such a choice of projects does not support "blind spots" and does not cause some areas or topics that may be important for certain actors to not be covered.

On the contrary, the ethical code describes quite vaguely activities that will not be supported: if a project is not in line with the stated objectives of the cluster or otherwise violates the cluster's principles, it may be denied cluster patronage (use of the name). However, it is not clearly stated what the official objectives of the cluster are.

5.5.6 Financial aspects

The gaming industry in Brno, and across the Czech Republic, has developed into an internationally connected sector. It includes a wide range of companies, from locally owned studios to major players operating under international ownership. Economically, the industry blends local entrepreneurship with significant foreign investment. For instance, Ashborne Games, based in Brno, is part of THQ Nordic, a subsidiary of the Swedish Embracer Group. 2K Czech, originally known as Illusion Softworks, became part of the American publisher Take-Two Interactive, and later its Czech division was absorbed into Hangar 13, which also operates under Take-Two Interactive. In 2021, Bohemia Interactive, although historically independent and locally owned, announced investment from Tencent, the Chinese technology giant, although the company maintains a degree of operational independence (Dealessandri, 2021a). Also in 2021, Madfinger Games secured investment from Hong Kong-based publisher Nuverse (Dealessandri, 2021b), which is a subsidiary of ByteDance, but has since gone independent following the success of its most recent game Gray Zone Warfare (Mančař, 2025). Thus, the largest studios in the Czech Republic are integrated into international structures, drawing on foreign capital and participating in global production networks. Smaller studios, however, often remain independently owned and maintain strong local roots. This dual structure — combining global reach with local creativity — characterizes the current state of the Czech video game industry.

5.5.7 Benefits for the stakeholders

As mentioned, the greatest benefit for the members of the Game Cluster is the network of contacts, which helps them find a job or a specific employee. They can also directly reach out to someone from another company, whom they would otherwise have to approach through an official, lengthy, and unreliable process. According to them, the Game cluster creates a functional, friendly, and informal environment that makes their daily work easier and improves the overall atmosphere within the game industry in Brno.

6 THE BORDEAUX CLUSTER

A close look into the French video games industry and the economic, institutional and cultural context within which video game companies evolve, show many peculiarities which influence significantly the local dynamics occurring in Lyon & Bordeaux and which need to be considered during the analysis of these two clusters.

The French video game industry generates approximately €5.6 billion in annual revenue and employs over 15,000 people across more than 660 companies (CNC Bilan 2024). France ranks as the sixth-largest video game market globally and second in Europe after Germany. Major French publishers include Ubisoft (founded in 1986, headquarters in Montreuil), which produces franchises like *Assassin's Creed*, *Tom Clancy*'s series, and *Just Dance*. Other significant companies are Gameloft (mobile games), Focus Entertainment, and Dontnod Entertainment (*Life is strange* series). Financial performance varies significantly across French studios: 27% have surpassed €1 million in annual revenue, 8.3% exceed €20 million, while 55% operate with revenues under €300,000 (Allcorrect Games Market Report, 2025).

Key development clusters exist in Île-de-France (Paris region) with over 200 studios, Rhône-Alpes (Lyon area), and Occitanie (Montpellier region). Île-de-France maintains its dominance with 47% of companies and 53% of job offers, though the gap indicates larger team sizes in the capital region compared to provincial studios (AFJV Observatory, 2023). Auvergne-Rhône-Alpes (Lyon area) hosts 13% of companies, strengthened by studios like Arkane Lyon and Eden Games, generating €746 million in revenue across 130+ companies (Game Only, 2025).

The French video game industry demonstrates peculiar institutional organization through strong national and regional professional associations. Clusters in France, and particularly in Bordeaux and Lyon, are structured around professional associations that act like trade unions on a regional scale. Capital Games (Île-de-France) is the largest regional association with 120+ members, manages the "Jeux Made in France" pavilion and regional mentoring programs (Capital Games, 2025), followed by Game Only (Auvergne-Rhône-Alpes) which coordinates 130+ companies, operates "Let's Go" studio incubator program, and secures regional export funding (Game Only, 2025). Other regional networks are also active as drivers of local clusters in video game development such as Push Start (Occitanie), SO· Games (Nouvelle-Aquitaine), Atlangames (Loire), East Games (Grand Est), Game In (Hauts-de-France) (SNJV Regional Partnerships Report, 2025).

Similar organizations act also at the national level. Several organizations operate at the national level such as SNJV (Syndicat National du Jeu Vidéo, national union) which conducts workforce studies and policy advocacy (SNJV, 2023), the SELL (Syndicat des Éditeurs de Logiciels de Loisirs, National Syndicate of Software Publishers) which represents the publishers, conducts large market studies, and organises major events such as Paris Games Week (SELL-Médiamétrie, 2024), and AFJV (Agence Française pour le Jeu Vidéo) which acts as an industry information portal and employment platform.

This institutional structure influences production through coordinated regional financing, collective training programs, and specialized regional development strategies that create structured pathways for studio growth.

The government provides financial support through the “Video Games Credit” (Crédit d'impôt Jeu Vidéo - CIJV), offering up to 30% tax credits for eligible productions. The Centre National du Cinéma (CNC) also funds video game projects through its selective aid programs, distributing approximately €20 million annually. The CNC's Fonds d'aide au jeu vidéo (FAJV) has been exclusively managed and funded by the CNC since 2021, supporting all phases of game development from writing to production (CNC FAJV Guidelines, 2022). In 2022, the FAJV examined 195 projects, supporting 96 total projects including 30 for the writing-conception phase, with an average funding of approximately €9,000 for author-designers (CNC FAJV Report, 2022). The fund provides an average support of €80,000 per development phase (F.initiatives, 2025).

Educational institutions like Supinfogame, Rubika, and ENJMIN (National School of Games and Interactive Digital Media) train approximately 3,000 students annually in game development disciplines. French studios have produced notable titles including Beyond Good & Evil, Rayman, Heavy Rain, and Vampyr. The industry spans console, PC, mobile, and VR platforms, with strength in action-adventure and narrative-driven games.

This institutional ecosystem creates a unique model that balances regional specialization with national coordination, distinguishing French video game production through structured collective action and professional organization. For the specific case of the Bordeaux video game cluster, it needs to be analysed in the context of an area that goes beyond the city of Bordeaux and includes many regions whose video game companies are part of a large associative network: SO.Games (SO for “Sud-Ouest”, Southwest), which operates at the regional level. This association is one of the key players in the management and running of the cluster in the region. A former chairman of SO.Games explains this issue as follows: "*Kalisto was spun off and two centres were formed. One centre was in Angoulême, because historically Angoulême has become something of a creative flagship and has attracted quite a few grants. And on the other side, Bordeaux Games, which was the economic powerhouse of the video games industry.*"

Figure 11 – Sud-Ouest Region in France

Thus, the cluster covers the whole region of the Nouvelle-Aquitaine, an area of 84,000 km², making it the largest region in France, with companies based in La Rochelle, Poitiers, Pau and Agen. Moreover, the video game cluster in the Nouvelle-Aquitaine region is organised along bipolar territorial lines, with a certain degree of specialisation. Bordeaux is the economic centre of the cluster, accounting for a significant proportion of jobs and housing the head offices of the main companies. The city is home to several major players, including Asobo Studio (297 employees), Ubisoft's Bordeaux subsidiary (360 employees) and Shiro Games (72 employees), as well as an ecosystem of medium-sized studios and independent structures. Angoulême has established itself as the cluster's training and incubation centre, structured around ENJMIN and its affiliated Wizz incubator, and capitalising on connections with the local animation and comics industries.

Since 2021, SO.Games, the result of a merger between Bordeaux Games and Angoulême Jeux Vidéo, has been the umbrella professional association for the video games industry in the Nouvelle-Aquitaine region. The association employs a small number of permanent staff but organizes intensive local activities with regular after-work sessions and several events.

6.1 Data Collection and Analysis

As mentioned earlier, video game clusters in France, and particularly in Bordeaux and Lyon, are structured around professional associations that act like trade unions on a regional scale. This has two important consequences for our research. First, their scope of action significantly structures the relevant level of study of the cluster. This has influenced our methodological approach in two ways: on the one hand, it delineated the geographical perimeter of the cluster which was apprehended at the regional level; on the other hand, we systematically took a dual view of the cluster as (i) a territorial agglomeration of actors and (ii) as a federation of companies linked by their membership of an association. In the case of the Bordeaux cluster, this was necessary because of its geographical and institutional idiosyncrasies and its historical evolution. Bordeaux cluster intermingles a cluster - in the sense of a local association - operating on a regional scale, and a cluster - in the sense of the density of players in the sector - at the level of the cities of Bordeaux and Angoulême.

Second, these associations act as main gateways to the local video game ecosystems they represent; a fact that had ambivalent consequences on our approach. On the one hand, having a main institutional representative of the cluster facilitates players' identification and census work. On the other hand, this entails a risk of overlooking players in the ecosystem who are not members of the local association. In the case of the two clusters in Bordeaux and Lyon, we were therefore careful to identify and collect the feedback of local stakeholders who were not members of the local association.

To conduct the interviews, we chose to work in waves, successively refining the research questions and our sampling approach. An initial series of interviews enabled us to (i) refine the analysis grid, in coordination with all the consortium teams involved in conducting the interviews, and (ii) identify key stakeholders who played central roles in the clusters and/or have important structural positions within the local networks of interactions and collaborations. We then proceeded with other waves of interviews based on (i) the recommendations of the interviewees and a snowballing effect, and (ii) our analysis of the members lists of the local associations. We also alternated between these waves of interviews and regular internal reviews that helped us to identify emerging themes and issues from the interviews and adjust our theoretical sampling of interviewees accordingly.

The interviews involved three senior researchers and one junior researcher. Most of the time, we tried to conduct the interviews in pairs, crossing teams. We worked jointly on the two clusters in Lyon and Bordeaux, to benefit from the insights provided by the comparison. Secondly, we tried to have a dedicated referent for each theme or cluster based on their specialization and areas of expertise.

The following themes emerged during this iterative process:

- emergence of collective action and the process of structuring of the regional association acting as a trade union
- the cluster and entrepreneurial dynamics and the genealogical dimension of entrepreneurial dynamics
- the cluster and the diversity of stakeholder rationales

All the interviews were conducted in French. Most of them have been recorded and, in this case, transcribed into French.

We would like to make several points specific to the research in the Bordeaux cluster. Firstly, the bipolarization of the cluster, between Bordeaux and Angoulême, led us to consider the two contexts separately and to put a focus specifically on Angoulême.

Secondly, our interviewees have highlighted the critical role played by the establishment of ENJMIN and the creation of its incubator, Wizz, in fostering a local entrepreneurial dynamic that benefitted directly the video games sector and influenced the local cluster. Consequently, we delved further into the cluster's role in business creation and entrepreneurial support and tried to organize systematic interviews with several entrepreneurs incubated at Wizz without success.

Phase	Period	Interviews
Consolidation of the analysis grid	June 2024	4 (2 researchers, face-to-face interviews)
Focus on “Angoulême”	Jan-Feb 25	6 (1 or 2 researchers, 3 face-to-face, 3 remote)
History and general questioning	Feb-May 25	9 (1 or 2 researchers, remote) (one of these interviews was also about Angoulême and is also counted in the previous line)
Angoulême entrepreneurship ecosystem	April 25	1

Table 9 – Data collection on Bordeaux / SO.Games cluster emergence & genesis

6.2 Cluster Origins and Historical Legacy

Compared to other industries such as the wine and food industry, the digital economy and the video games sector are relatively late comers in Bordeaux". As illustrated by a former SO.Games chairman:

"*For a long time, Bordeaux was a sleepy town, in terms of digital technology, there were start-ups and companies that were doing things outside the wine sector, but it didn't do much until Kalisto turned things upside down*".

6.2.1 The Legacy of Kalisto

The video game ecosystem in the Nouvelle-Aquitaine region has its roots in the history of Kalisto Entertainment, founded in 1990 by Nicolas Gaume. The company was one of France's first major video game success stories, employing over 300 people between Bordeaux and Paris. The closure of Kalisto in 2002, following financial difficulties during a crisis in the technology sector, left many professionals with a strong attachment to the region without a job. Several of them went on to set up their own businesses, in an area that had been emptied of its video game ecosystem. The fall of Kalisto and the entrepreneurial spin-off wave that followed in its wake laid the foundations for the creation of the local ecosystem. A former Kalisto employee who co-founded a major video game studio in the region testifies as follows: *"We didn't realise it when, after Kalisto ended, we wanted to recreate our job in the region. Because we weren't necessarily all mobile, many of us left for Canada, Paris or elsewhere, but there were a few of us who stayed in the area, no one could hire us, there were no other video game companies. So, for those of us who lived there, we took charge and set up our own companies, and that's how our different companies got off the ground."*

Many well-known studios emerged during this period as Kalisto's spin-offs. Motion Twin was co-founded in 2001 by a former Kalisto employee, Nicolas Cannasse. It mobilized web technologies to develop free online games with microtransactions, anticipating free-to-play models. Asobo Studio was created in 2002 by 12 former Kalisto employees who bought the rights to the game SuperFarm. The company quickly developed expertise in subcontracting for international publishers, before moving on to create its original IP. Other companies emerged at the same time, reflecting a sustained entrepreneurial dynamic that was gradually transforming the local economic landscape.

This spin-off model became a structural feature and an engine of growth for the local ecosystem. Motion Twin, in turn, generated several spin-offs. It is the same for Asobo. During this period, the local video game scene was very unstructured, with limited funding opportunities. A former Kalisto employee attests: *"When we started up our own companies, after Kalisto ended, we went to see the bankers, saying that we were former Kalisto employees, and we were thrown out with a broom. Because they'd all lost money."* The local and national financial system developed an aversion to the video game sector, which constrained entrepreneurs and studio managers and limited their development capacity.

The shared history between Kalisto's former employees who have turned to entrepreneurship, the bonds of friendship and solidarity that united them and the sharing of many commonalities of interests including the difficulties stemming from the French video game crisis resulted in the launch of a local association, Bordeaux Games, which will facilitate the institutionalization of the sector locally and its subsequent development.

6.2.2 An Institutional dynamic in Angoulême

In parallel with the entrepreneurial dynamic fuelled by the various business start-ups that can be likened to spin-offs in Bordeaux, an institutional dynamic has been set in motion in Angoulême. In 2001, the creation of ENJMIN was an important structuring element. The public school is attached to the CNAM (Conservatoire national des arts & mériers), a continuing education institution reporting to the Ministry of Higher Education and Research. The school's localization in Angoulême is part of a national strategy of "competitiveness clusters" aiming to spark inter-organizational collaborations and sustain the development of competitive industrial clusters in different regions in France. Locally, this led to the creation of an "image cluster" around the International Comics Festival, founded in 1974, capitalizing on Angoulême's image as a centre for graphic design. Ultimately, these different factors helped the development of a large local pool of skilled talents and specialized professionals, which proved a useful asset and catalyst that enabled the formalization of a local digital industry. The school quickly established itself as a key player in the national video game training landscape, accelerating the development and consolidation of a local ecosystem. ENJMIN has become a main attractor of video game students to Angoulême, resulting in a significant entrepreneurial dynamic. There are currently 28 companies in Angoulême with an average of 4.5 employees. The school's incubator is hosting 5 studios for its 2025 cohort.

6.2.3 The emergence of Collective Action

Until 2016, Bordeaux and Angoulême belonged to different regions, administratively speaking. Consequently, the two ecosystems evolved separately. The creation of "Bordeaux Games" in 2007 marked the institutionalisation of relations between the entrepreneurs born out of the Kalisto spin-off and based in the city of Bordeaux. This initiative is a response to the need to pool institutional relations, coordinate recruitment needs and practices, and share technical and business expertise. Local authorities, in their efforts to develop the creative economy, increasingly approached companies in the sector on an individual basis, taking up a significant amount of time without providing any direct value to the companies. The association provided an institutional framework for better management of the requests from public authorities, as well as an optimized response to the increasing local needs in terms of recruitment. In a restricted employment area, competition between companies to attract qualified talent poses a risk of generating wage inflation that is detrimental to the sector. The founders of the main studios in the area have established "gentlemen's agreements" to avoid aggressive poaching and to mutualize their recruitment approaches and practices. Sharing entrepreneurial expertise is a third pillar that legitimized collective action. Most of the business creators from Kalisto have strong and proven technical expertise but little experience in business management and business development. By facilitating the sharing of practical information and the optimization of legal and tax aspects, the association has helped its members to better manage these shortcomings.

More generally, the creation of the association stems from a desire to create an ecosystem for the region to fill multiple gaps which were present at that time both locally and nationally. One of the main founders of SO.Games detailed these collaborative processes as follows: *"After 4-5 years, we were all meeting regularly. We needed to structure ourselves to respond to common problems, which* *were essentially recruitment, not stealing from each other, and above all to respond to the local authorities who were asking us lots of things and we didn't really have the time to respond. So, we had to structure ourselves to meet the needs of the region, the department and the city. And also, to break down our isolation a bit."*

At the same time, in Angoulême, David Elahee established an informal collective of local creators, revealing the existence of some thirty players who are little known to the local institutions and public authorities. He remembers: *"And I went round the bars and as there were no associations, I thought there weren't many games creators and in fact there were plenty and at each bar I met 1, 2, 3 and after a while I counted and in fact there were a lot of us."*

The emergence of the Angoulême collective, "Angoulême Jeux Vidéo", took place in a different and less institutionalized dynamic in comparison to the one in Bordeaux. More informal, the collaborative dynamic in Angoulême was focused on different aims including an enhanced opening of the community and followed a logic of commitment and solidarity that favors inclusion and collaborative participation.

Until 2015, Bordeaux and Angoulême belonged to two separate administrative regions in France: Aquitaine and Poitou-Charentes, respectively. Despite their geographic proximity, regional policies, funding mechanisms, and cultural strategies were largely independent, limiting cross-territorial coordination—particularly in emerging sectors such as digital industries and video games. The 2016 territorial reform of French regions merged Aquitaine, Limousin, and Poitou-Charentes into a single, larger entity: Nouvelle-Aquitaine. This administrative change created new opportunities for inter-city collaboration, pooling of resources, and unified regional strategies.

As a result, the video game ecosystems of Bordeaux and Angoulême began to converge more intentionally. Bordeaux, with its urban scale and concentration of tech talent, and Angoulême, with its historical specialization in animation, comics, and digital storytelling, have complementary strengths. The Bordeaux Games association was asked to merge with the digital industries to retain their funding. However, the association refused this request, which greatly reduced its activities. In 2019, Stéphane Bonazza (Shiro Games) was elected as president. The association fully resumed its activities and was granted further subsidies by the regional authorities, on condition that it extended its activities to the whole region. A new association was founded in 2021. It was named SO.Games (Sud-Ouest Games). This association supported a more integrated and diversified regional cluster. The creation of regional development tools and support programs—such as subsidies, incubators, and shared events—further accelerated this consolidation.

6.3 Local Industry Features & Components

Bordeaux is the sixth-largest city in France and serves as the economic capital of the Nouvelle-Aquitaine region. It has a rich economic history dating back to the 18th century as a major Atlantic port, earning it the nickname "Port of the Moon" due to its crescent-shaped position along the Garonne River, which facilitated extensive maritime trade with the Americas and established its reputation for wine exports.

In the 20th century, Bordeaux diversified its industrial base beyond wine and maritime commerce, developing significant aerospace manufacturing capabilities with companies like Dassault Aviation and later benefiting from major technology investments. The city's transformation accelerated in the 1990s with substantial infrastructure development, including the TGV high-speed rail connection to Paris (2017) and the expansion of its university system.

According to SO.Games data, Bordeaux concentrates approximately 60% of the regional video game industry's employment, making it the primary hub for game development in southwestern France, while Angoulême accounts for roughly 25% of the sector's activity (SO.Games, 2024)

The SO.Games association, which operates throughout the Nouvelle-Aquitaine region, counts 108 member companies representing more than 1,200 jobs in the sector. This ecosystem is made up of a wide range of players, with differing sizes and positioning. The historic spin-off effect from 1990-2000, initiated by Kalisto and then reproduced by Motion Twin, has created 'families' of companies sharing common cultures and methods. This filiation generates lasting networks that facilitate the circulation of skills and information and maintain the cohesion of the ecosystem.

7.3.1. Cluster demographics: key actors & stakeholders

Typology of companies by size	Employees	Examples
Subsidiaries of international companies	> 300	Ubisoft
Major Independent studios	>100	Asobo studio: 320 employees, co-development model with Microsoft (Flight Simulator, 60% of staff) and shared publishing with Focus (Plague Tale, 25% of staff)
Medium-sized studios developing their own IP	20-100	Shiro Games: 75 employees, self-publishing model, specialising in strategy games
Medium-sized subcontracted studios	20-30	Kalank: based in Angoulême, specialising in virtual and augmented reality
Small independents	<10	83% of SO.Games members are small businesses, including many freelancers and micro-businesses.

Table 10 – Typology of video game companies in Bordeaux cluster

The ecosystem has a variety of business models. Large structures such as Asobo Studio and Ubisoft Bordeaux are developing business models based on contracts with major publishers, or direct affiliation with them, giving them financial stability and making them less dependent on the local network for their operational needs. Self-publishing, as practiced by Shiro Games and Motion Twin, offers total control over the value chain but requires significant investment and a high level of risk-taking. The cooperative organization model experimented by Motion Twin (a SCOP, société coopérative de production) explores alternative ways of distributing power and profits. However, the great bulk of SO.Games members (83% of them) mainly consist of independent studios. These structures are based on fragile economic models, requiring them to constantly seek strategies to diversify their activities. In their attempt to stabilize cash flow by diversifying revenue sources, several of these studios are developing hybrid models combining video games and applications for other sectors. They are the most dependent studios on the shared services offered by the SO.Games association and therefore benefit the most from collective solidarity mechanisms.

6.3.1 Institutional Support and Funding

The ecosystem is based on a complex architecture of public funding organized into complementary layers from the local to the national level. This architecture offers a range of financial tools adapted to the different stages of project development. It also optimizes the complementarities between the levels while reducing the risks of duplication and competition between local authorities.

- The national level provides the FAJV hosted by the CNC for development subsidies, the Video Game Tax Credit for tax support, and BPIFrance (Banque publique d'investissement) for loans and guarantees.
- The regional level is characterized by its own schemes. With the Nouvelle-Aquitaine Region subsidies, there was a transition from repayable advances as major schemes to direct subsidies and specialized sector funds.
- The departmental and local level completes the system with support from the metropolitan and inter-municipal authorities and aids for property and equipment. It also involves specialized interventions: the Département of Charente finances ENJMIN, whereas Bordeaux Métropole supports local initiatives, and Grand Angoulême finances the image cluster.

Public funding constraints often impose a ceiling of 50% public subsidy. This forces companies to find private co-financing, creating a major bottleneck for project development. The lack of specialized private investors in the region forces companies to seek financing in Paris or abroad, generating high transaction costs and external dependency. This is evidenced by one studio owner as follows: *"There is still public money, but when you ask for public money, you also need private money, because often it's a maximum of 50% of the expenditure. Unfortunately, today it's the private partners who aren't following suit."*

The entry of international investors such as the Chinese giant publisher Tencent in Shiro Games bears witness to the recognition of the quality of local studios.

The ecosystem also benefits from the support of economic development players. In Angoulême, the economic public development agency Magelis, officially known as *Le Pôle Image Magelis,* is working to support and structure the visual and digital content industries in and around Angoulême by concentrating its efforts on specialized real estate and industry events; EurekaTech officially designated as a "technopole" (a local innovation hub that supports the emergence and development of innovative businesses primarily within the Charente area) is responsible for entrepreneurial support and innovation: it has supported 18 companies in three years, with a strong video game focus.

6.3.2 Training & Professional Support

ENJMIN is the backbone of the training system in the region, with an annual budget of more than €600,000 funded by Magelis. This public school, the only one of its kind in the region, and the first public school dedicated to the video games industry in France, has a number of distinctive features: it has a large training capacity (approximately 225 students are enrolled per year in its various degree programs); it offers a wide range of courses covering all the professions in the sector. Currently, it has 105 apprentices following internal training within studios. The project-based teaching developed by ENJMIN is a "challenge-based learning" approach directly linked to industrial needs. This method facilitates the integration of graduates into the local professional ecosystem and keeps training in line with changing market needs.

The integration of training and industry is reflected in the close links between the school and the local ecosystem: for several studios more than 60% of their recruits are ENJMIN graduates, whereas video games companies are actively involved in the training through the regular contributions of local professionals to the curriculum and the allocation of scholarships to finance student projects. This synergy creates a virtuous collaborative cycle that optimizes the employability of graduates while meeting the recruitment needs of companies.

The training ecosystem has expanded to include complementary public and private institutions which helped to diversify the pipeline of talent: École42 offers training in IT development, the EESI (École Européenne Supérieure de l'Image, European Higher School of Image) is developing transmedia courses, while university courses provide additional training in IT and multimedia. This diversity is a determinant factor in the attractiveness of the region.

The Wizz incubator completes the training offer and diversifies it to meet entrepreneurial needs and help enhance the ability of the local ecosystem to support entrepreneurial endeavors. This scheme is the result of a collaboration between ENJMIN and Eurekatech. The programme offers 18 months' support, including free accommodation in dedicated premises, specialised training covering legal, marketing and business structuring aspects, access to a professional network and technical equipment. So far, it has supported 18 companies over three classes.

6.3.3 Cluster DNA and Identity

The economic and geographical characteristics of Bordeaux and Angoulême have strongly influenced the dynamics of the video game ecosystems that thrived in the region. Thus, the DNA cluster and its attractiveness have not only been shaped by collective dynamics taking place locally but also by these specific economic and geographic features of the cities. Our analysis led us to distinguish the following three identitarian marks of Bordeaux cluster.

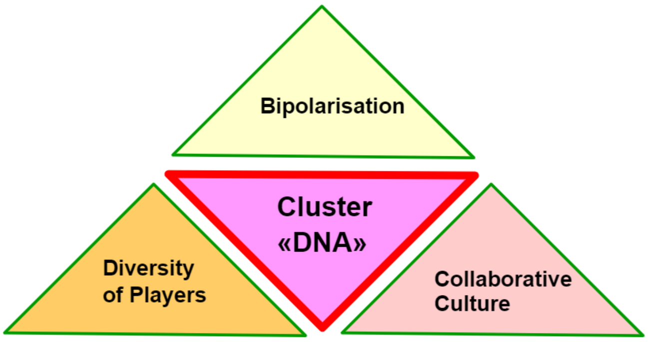

Figure 12 – Bordeaux cluster DNA

6.3.3.1 Territorial bipolarization as a structural geographic maker

The bipolarization between Bordeaux and Angoulême constitutes one of the major identity markers of the cluster. It has brought different stakeholders within an ongoing merging process aiming to enhance the complementarities between the two ecosystems in each of these cities while adjusting to the multiple sectoral transformations occurring at different levels: internationally, nationally and locally.

Bordeaux, as explained above, embodies the industrial and business logic of the cluster. As a regional metropolis connected to Paris by a 2-hour TGV train, it naturally attracts large structures (Ubisoft, Asobo Studio, Shiro Games...) that require international accessibility and a sufficient labour pool for their recruitment needs. This concentration generates an agglomeration effect where standardized professional practices develop, along with a culture of economic performance and privileged links with Parisian and international financing and publishing circuits. Angoulême has developed an alternative logic centered on creative experimentation and mutual solidarity. As a medium-sized city with attractive real estate costs, it constitutes a "refuge" for artists and indie creators according to local business leaders. This economic configuration allows for entrepreneurial and creative risk-taking that would not be possible in a more expensive urban environment. The Angoulême ecosystem prioritizes artistic approaches, subsidized projects, and hybridization with the comic book and animation sectors.

This bipolarization is currently undergoing significant mutation due to work dematerialization, evolving business models and the deliberate process of merger and convergence initiated by local video game companies. Widespread post-COVID remote work helped to relativize the importance of geographic proximity, allowing studios to build distributed teams that prioritize skills over location. Simultaneously, the emergence of new markets (serious games, industrial applications) redefines each territory's comparative advantages, with Angoulême developing recognized expertise in virtual reality applied to industrial sectors.

6.3.3.2 Diversity of players

The second identity marker lies in the structural diversity of actors composing the local ecosystem. The current architecture involves an important number of small structures (independent studios, micro-enterprises, freelancers) which coexist with 20% of large companies (over 50 employees). This configuration creates a pyramid of actors with complementary needs and capabilities. Large structures (Asobo, Ubisoft, Shiro Games…) provide economic stability, international references, and talent absorption capacity whereas small structures fuel creative innovation, organizational experimentation, and production diversity.

This diversity generates virtuous dynamics of talent and skill circulation. The ecosystem functions as an internal labour market where professionals alternate between secure large productions and creative independent projects. This bidirectional mobility enriches the entire ecosystem: large structures benefit from creativity developed in independent work, while small studios access technical and managerial skills acquired in the industry.

However, this diversity is undergoing mutation due to several factors. Ubisoft's arrival transformed local balance by creating labour market tension that pushed salaries upward. Simultaneously, the current economic crisis in the sector weakens independent business models, risking reduced creative diversity in favour of industrial concentration.

6.3.3.3 Dual Collaborative cultures and their ongoing transformation

The third identity marker of the Nouvelle-Aquitaine video game cluster lies in the differentiated collaborative cultures characterizing Bordeaux and Angoulême. While both transcend organizational boundaries, they evolved along distinct trajectories reflecting their territorial characteristics and industrial histories.

Bordeaux has developed a pragmatic, business-oriented collaborative culture rooted in its industrial heritage from the Kalisto era. This culture emphasizes mutual aid for concrete operational needs: shared administrative expertise, collective negotiation of service rates, and coordinated institutional representation. As one entrepreneur explains: *"We created Bordeaux Games to protect ourselves from politicians who kept asking us for things individually."* This instrumental approach reflects the economic pressures of larger structures operating in competitive international markets.

Angoulême has cultivated a more idealistic, community-driven collaborative culture influenced by its unique territorial positioning. As one studio owner explains: *"As we don't have an airport, we know we'll never get too many big companies, and in fact it's a kind of refuge for artists and indie artists for medium to small studios who can find land at very low prices."* This geographic constraint has fostered a distinctive creative environment where *"Angoulême is a really attractive town for images in general. [...] It's got a really interesting, fast-moving artistic scene."*

This territorial specificity shapes a fundamentally different approach to collaboration, rooted in artistic solidarity and public mission consciousness. As another studio owner notes: *"Our games are publicly funded, so we want the public to try them out."* The cultural divide is explicitly acknowledged: *"They're big, we're indie, we don't have the same state of mind."* This reflects not just size disparities but fundamentally different values regarding creative work and business development.

The creation of SO.Games represents an ambitious attempt to harmonize these divergent cultures within a unified framework. The institutional integration has generated innovative hybrid mechanisms: alternating territorial presidency, differentiated event programming, and digital platforms accommodating different communication styles. However, convergence remains incomplete, with ongoing tensions over resource allocation and strategic priorities reflecting the challenge of integrating Angoulême's identity with Bordeaux's business-oriented ecosystem.

These collaborative cultures are also being challenged. The arrival of large international structures like Ubisoft introduces hierarchical and competitive logic challenging traditional mutual aid mechanisms, particularly threatening Angoulême's refuge-like character for independent creators. Generational changes compound these pressures, as new creators develop different collaboration expectations and may be less invested in territorial solidarity. Professionalization imperatives require formalizing previously informal practices, potentially reducing the flexibility that made local collaboration effective, especially for Angoulême's organic, community-based model.

This territorial DNA mutation testifies to ecosystem vitality and adaptive capacity but reveals fundamental fragility. These pressures raise fundamental questions about the cluster's capacity to renew its collaborative identity while preserving distinctive advantages. The central challenge lies in maintaining delicate balance between accommodating large structures' operational needs and preserving the supportive environment that has made Angoulême a genuine "*refuge for indie artists and medium studios*", as expressed by the head of a company in Angoulême, and member of the board of SO.Games.

6.4 Cluster Evolution

6.4.1 Critical Moments and Phases

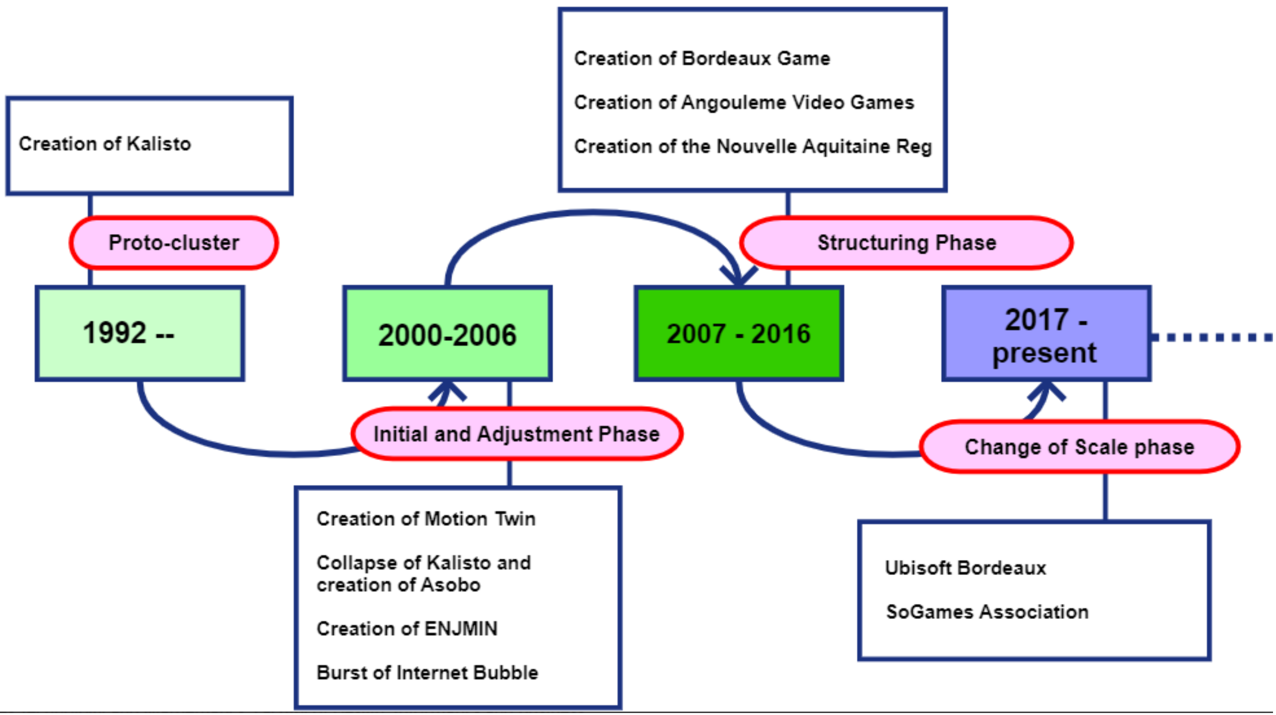

Figure 13 – Bordeaux cluster timeline

The region's video game cluster has undergone several critical events, which have largely shaped its dynamics and development. We identify three major phases.

6.4.1.1 1990-2002: the era of the isolated large company

This first phase, described above, runs from the creation of Kalisto to its demise. The development of this national champion acculturated the city of Bordeaux to video games and contributed to its local thriving, but its demise was a traumatic event which shaped the local video game ecosystem and changed its landscape.

6.4.1.2 2001-2017: the parallel development of two ecosystems

A second period in the history of the Bordeaux cluster began with the demise of Kalisto and the establishment of ENJMIN, extending until the next major regional transformation brought about by the creation of the Nouvelle-Aquitaine region and Ubisoft's establishment of a local studio. This period was characterized by the structuring processes of two distinct ecosystems—Bordeaux and Angoulême—which, despite numerous similarities, evolved according to different logics and dynamics.

In Bordeaux, the video game industry expanded following the wave of spin-offs from Kalisto within a quasi-non-existent ecosystem, lacking established companies, supporting institutions, publishers, and funding mechanisms. A former SO.Games chairman compares Bordeaux to Lyon regarding this aspect: "F*or me, the essential difference is that in the value chain and in the video game ecosystem, Lyon was historically much stronger than Bordeaux because there were players present who were able to give studios work*."

Future major players such as Asobo (2002) and Motion Twin (2001) were established during this period by former Kalisto employees. InFusio, another historic Bordeaux company founded in 1998 with a focus on mobile games, closed in 2009, subsequently contributing talent and diverse skills to the ecosystem and fuelling the spin-off dynamic. It also helped to diversify this pool of talents, skills and knowledge thanks to its specialization in mobile gaming. According to a former head of Bordeaux Games, "*when InFusio came to an end, it brought in other creators, people who, like for Kalisto, wanted to recreate themselves by staying in the field. A few companies were created, led by former InFusio members. So that broadened the 'herd' a bit, the horizons, because it's another world, it's the world of mobile, java, which wasn't our world at all, we came from consoles or PCs. So, it opened everyone's chakras a bit and it enriched everyone's perspectives a bit*."

Meanwhile, the ecosystem in Angoulême developed through institutional action, specifically the creation of ENJMIN, which fostered a different entrepreneurial dynamic characterized by younger profiles benefiting from institutional support. One studio manager illustrates this phenomenon as follows: *"From the moment ENJMIN started training in video games, it was also a turning point. Because it brought in other teachers, other ways of looking at things, taking part in juries, seeing young people with other ideas, having interns, who we trained in a production method and then hired. Things changed little by little, without really knowing, and these young people took over afterwards.*"

The creation of the Nouvelle-Aquitaine region in 2016 represents a pivotal event that reconfigured the cluster's dynamics. This administrative reform necessitated the merger of local associations, as the region made its support conditional upon the unification of previously dispersed actors. This structuring process was formalized through the creation of “Bordeaux Games” in 2007. Angoulême Jeu Vidéo was formalized much later in 2016.

Ubisoft's arrival in Bordeaux in 2017 marked also a significant acceleration in the cluster's development. This expansion was facilitated by the opening of the high-speed rail line connecting Bordeaux to Paris in the same year. With the prospect of creating 700 new jobs, Ubisoft became a transformative actor within the cluster, altering internal power dynamics and accelerating agglomeration effects. This establishment brought territorial legitimacy while simultaneously creating pressure on the local labor market.

A big studio manager commented on this point as follows: *"From a professional point of view, having a big company like Ubisoft next door makes the cluster more attractive. It removes a risk. It's reassuring. There's pressure to recruit, but it's a huge benefit.*" Thus, while Ubisoft's arrival initially generated concerns about talent capture, the anticipated tensions have not materialized, as the benefits to the ecosystem—including employment diversification and territorial attraction effects—have predominated. According to a Ubisoft manager: "*When Ubisoft arrives, everyone is naturally a bit scared, thinking that they're going to capture the talent.*"

Concurrently, the growing asymmetry between large and small studios has generated tensions regarding the association's role and priorities. Large studios seek outreach and political representation services commensurate with their scale, while smaller structures require operational support and cost-sharing mechanisms essential for their daily survival. The proper management of these tensions seems to be a critical condition for its evolution afterwards.

6.4.1.3 2017- today: change of scale

From 2017 onwards, the cluster underwent a significant transformation characterized by the arrival of key industry players and the establishment of a regional association, SO.Games, resulting from the merger of Bordeaux Games and Angoulême JV.

Prior to this consolidation, the two structures operated independently without formal coordination mechanisms, generating counterproductive competition for public funding resources. Bordeaux Games functioned as a professional association primarily representing Bordeaux-based enterprises, operating with limited financial resources but possessing substantial economic legitimacy. Conversely, Angoulême Jeux Vidéo existed as an informal collective centred around ENJMIN, focusing on educational initiatives and support for emerging creators, without implementing a formalized membership system. This fragmented configuration resulted in the dispersal of collective efforts and constrained the sector's capacity to effectively advocate for its interests with regional institutions, which sought a unified representative body for the entire territory.

The merger did not emerge from spontaneous stakeholder initiative but rather constituted a quasi-mandate from political authorities. Angoulême stakeholders expressed concerns regarding potential absorption by the more economically structured Bordeaux ecosystem, while certain Bordeaux Games members questioned the strategic value of integrating actors with profiles more peripheral to core industry activities. The negotiation process extended over eight months and necessitated sophisticated governance arrangements to ensure territorial balance. The nomenclatural transition from Bordeaux Games to SO.Games symbolized this expanded regional scope. Balanced territorial representation within the governance structure and biennial alternation of the presidency were instituted to prevent the dominance of either territory.

The appointment of a Managing Director in September 2021 operationalized the professionalization of the merged entity. Her professional profile encompassed both technical expertise and managerial competencies, complemented by experience in the events sector and at Ubisoft, conferring legitimacy across diverse industry segments. The number of members rose from 17 at the end of Bordeaux Games to 108 at SO.Games in 2024, reflecting the gradual structuring of the cluster. This growth reflects the systematic professionalization of the association and its evolution from an entirely voluntary organization to a hybrid model incorporating qualified professional staff. This institutional transformation has enabled the cluster to enhance its service provision, external representation capabilities, and inter-territorial coordination mechanisms while preserving its foundational collaborative logic.

6.4.2 Major Factors of Change & Growth

The evolution of the Nouvelle-Aquitaine video game cluster has been shaped by multiple interconnected factors operating at different levels—territorial, institutional, technological, and industrial.

Territorial and infrastructure developments have been fundamental drivers. The arrival of the Bordeaux-Paris high-speed rail link and the creation of the Nouvelle-Aquitaine region have been major catalysts for change, enhancing territorial attractiveness and institutional coordination.

"*Another important point is the arrival of major players who choose to set up in Bordeaux. There have also been lots of small ones, or company bosses who have come to set up in Bordeaux even though their companies were still in Paris. It was at a time when Bordeaux was becoming a little fashionable, with the prospect of the TGV being 2 hours away. There were quite a few people who chose to set up here and so it renewed the profiles of the people and then with people with a lot of employees behind them, who immediately had either a big background or a big profile and so it resized things quite a bit and that opens up our horizons a little too.*" (Former SO.Games chairman).

Institutional factors have played a crucial role in shaping the cluster's development. The establishment of ENJMIN in Angoulême created a pipeline of trained talent and fostered a distinct entrepreneurial dynamic centred around education and institutional support. The administrative reform creating the Nouvelle-Aquitaine region mandated organizational restructuring, enabling more coherent regional representation.

Industrial transformation and market evolution have fundamentally altered the sector's dynamics. The spin-off phenomenon following Kalisto's closure in 2002 created an entrepreneurial culture based on experience transfer and network effects. The diversification brought by companies like InFusio introduced new competencies in mobile gaming, broadening the local skill base. More recently, Ubisoft's arrival in 2017 transformed the cluster's scale and legitimacy while creating both opportunities and tensions around talent competition.

Technological and business model shifts have reduced traditional geographical constraints. The shift from physical distribution to digital platforms, with the accelerating expansion of the Steam platform from 2014, has made publishers' proximity less critical for market access. One of our interviewees details this point: "*Dematerialisation, easier access to inexpensive technologies, the fact that you can try your luck on your own if you have some marketing or com skills or just work with a distributor. And then a few developers who were starting to become publishers themselves.*" (Former SO.Games chairman)**.**

The development of remote working, accelerated by the COVID-19 crisis, has profoundly altered the need for local roots, allowing companies to build geographically dispersed teams and calling into question the importance of physical proximity for certain types of collaboration: "*We're all teleworking, that's how it happened. And because it's a model I like. The musician is in Paris and we have an artist who essentially does the sets, who is in Brazil*." (Angoulême studio owner).

These converging factors have enabled the cluster to evolve from a fragmented, volunteer-based ecosystem to a professionalized regional structure capable of supporting diverse business models while maintaining its collaborative ethos. However, they have also generated new challenges, particularly in managing the growing asymmetries between large and small studios and balancing territorial specificities within a unified governance framework.

6.5 Collective Actions

Collective actions within the region manifest in various forms. Prior to formal organizational structures, these primarily consisted of informal gatherings motivated by the necessity for entrepreneurial support. The transition to formalized associations addressed more explicit needs and facilitated the development of additional initiatives. Bordeaux Games was established to consolidate institutional representation and address recruitment challenges collectively. Subsequently, the organization secured regional support to employ permanent staff and conduct essential coordination activities as part of the merger with Angoulême JV. In Angoulême, the association's objective was to enhance ecosystem visibility among local authorities, financial institutions, and in the eyes of the general public. SO.Games provides a comprehensive range of services organized into three distinct categories: network management, business support, and collaborative external initiatives.

6.5.1 Network Animation

Monthly after-work sessions organized in Bordeaux and Angoulême within local establishments facilitate informal professional encounters. While initially emphasizing social interaction, these gatherings have progressively incorporated more structured professional formats including playtest sessions, project presentations, and technical masterclasses. The Game Dev Talks, inherited from Angoulême's 'AJV Nights'[3], exemplify the specialized approach to technical skill development. These sessions establish critical linkages between educational institutions and industry practitioners within a sector characterized by rapid technological evolution.

[3] after-works for ENJMIN students

This networking infrastructure is enhanced through a dedicated Slack platform that operates on spontaneous dynamics while requiring substantial volunteer leadership from association members. Consequently, Slack functions simultaneously as both a facilitation tool and a support mechanism. Combined with the two-person permanent team, it constitutes the operational backbone for daily ecosystem coordination. This platform enables real-time information circulation and effectively substitutes for traditional formal coordination mechanisms that would prove prohibitively expensive across such a geographically dispersed territory. The Slack infrastructure is organized into specialized channels: thematic channels for document review and member services, and territory-specific channels to maintain local connections. The collaborative knowledge base, continuously updated by experienced members, generates collective learning effects particularly valuable within a sector where documented resources remain scarce. This knowledge capitalization transforms individual expertise into shared institutional memory accessible throughout the ecosystem.

SO.Games chairman describes this collaborative logic as follows: "*On Slack, all members are consulted about decisions, we try to discuss, to have open debates, to favour open channels rather than closed ones, to favour questions that are 'put out in the open' rather than direct messages that are a little hidden. So, it's a whole physiognomy of open and 'horizontal' organisations.*"

6.5.2 Business Support

SO.Games provides "Boost My Games," a comprehensive support service for grant applications. Beyond simple document review, this service harmonizes application formats across different funding organizations and develops shared guidance resources. The subsidy procedures of both the CNC and regional authorities remain opaque to newcomers, creating entry barriers that disproportionately penalize emerging structures. The association therefore functions as an administrative intermediary, reducing information asymmetries and bureaucratic complexity.

The Wizz incubator, developed in Angoulême through partnerships with EurekaTech and ENJMIN, provides intensive 18-month support to approximately six projects annually. This program exemplifies the integration between educational institutions and practical business development.

The association also negotiates preferential rates for trade fair participation, coordinates bulk purchasing arrangements, and facilitates access to legal and accounting expertise, making professional services accessible to organizations that would otherwise lack individual capacity to secure them. The association maintains a collective presence at Gamescom through shared exhibition space, enabling numerous studios to participate in an event essential for international visibility but financially prohibitive for most independent developers. Additionally, the association secures discounted access to national events through inter-regional association negotiations.

6.5.3 Shared External Activities

The association's most prominent activities involve organized industry events. Public-facing initiatives include the local Spawn festival, institutional open houses, and promotional events designed to enhance regional visibility and ecosystem awareness among local decision-makers. General professional events encompass monthly networking after-work sessions, Game Dev Talks for technical presentations, and continuing education workshops aimed at maintaining professional competency levels.

Executive-level events such as Horizon, Game Invest, and strategic sector meetings target industry leaders and potential investors. This audience segmentation demonstrates organizational sophistication in optimizing event impact according to specific objectives and target demographics.

In Angoulême, Game Conf and Game Invest represent two Magelis-organized events addressing the practical needs of independent professionals: business development, investor relations, and commercial training. In Bordeaux, Horizon constitutes a high-profile event held at the prestigious Opéra de Bordeaux, aspiring to establish itself as a benchmark gathering for industry executives. The event's temporary suspension reflects challenges in achieving financial sustainability and ongoing debates regarding strategic priorities. This coexistence of diverse approaches demonstrates ecosystem richness while simultaneously revealing difficulties in establishing coherent event strategies. The Angoulême Video Game Festival complements this portfolio by engaging public audiences, contributing to regional awareness and ecosystem promotion among local citizens and decision-makers.

SO.Games maintains a structured dialogue with educational institutions, fostering training-industry linkages to optimize alignment between educational offerings and economic requirements. This includes participation in juries, secondary education outreach programs, and regular professional involvement in curriculum development, creating an effective training-employment continuum. These initiatives significantly contribute to regional attractiveness by enhancing local recruitment pool quality while facilitating graduate integration into the professional ecosystem, thereby reducing talent migration risks.

The organization additionally performs lobbying functions at the local level and participates in national advocacy through the consortium of regional associations. Its contributions to regional aid fund development and influence on administrative procedure harmonization demonstrate policy influence capacity benefiting the entire ecosystem.

The Angoulême JV founder describes their proactive approach: "*We were taken seriously, because we set up a series of events where we were, in inverted commas, in pirate mode, we did what we wanted, and we didn't necessarily have national legitimacy, but we did it anyway, and in fact it worked every time. And likewise, we created an investment event, even though the VEF already existed and the SNJV felt that investment was its preserve. But we did it anyway, it worked anyway, and as a result, we took the lead. And each time, just like that, we worked our way up by inviting ourselves in and getting our foot in the door. And that allowed us, as video game companies, to improve, to find new customers, to find new prospects, to have relationships with banks, to find investment. And little by little, our companies in the sector went up in level, they went up in plate.*"

6.5.4 Foresight and collective responses to societal challenges

The JYROS project exemplifies the cluster's capacity to develop large-scale sectoral innovations through inter-regional collaboration. Initiated by Pierre Forest in Bordeaux and financially supported by Lyon Game Only, this project develops methodologies for measuring video game environmental impact, anticipating increasing eco-conditionality requirements in public funding. Multiple working groups have been established to provide collective responses to societal challenges: digital sobriety initiatives, sectoral diversification strategies, and technological innovation clusters. These groups function as collective innovation laboratories, building shared expertise on emerging issues while positioning the local ecosystem as a pioneer in emerging markets and distributing monitoring and expertise costs across participants.

6.6 Networks & Collaborations

Within this geographically dispersed cluster, physical proximity does not constitute the determining factor in economic collaboration. Most studios develop geographically distributed teams, systematically prioritizing competencies and personal trust over location. This trend has intensified with post-COVID remote work adoption, transforming geographical proximity into a social rather than economic asset. Companies increasingly favour organizational flexibility and access to specialized skills, even when managing teams distributed across multiple continents. Nevertheless, geographical proximity retains specific value for professional socialization and informal information circulation. In Bordeaux, downtown studio concentration facilitates daily interactions and generates 'café effects' that stimulate collective creativity. In Angoulême, urban concentration encourages spontaneous encounters and informal information exchange between designers from diverse sectors.

A studio owner explains this collaborative dynamic: *"We're not in competition with each other, we reinforce each other, and this network also allows us to circulate this with a strong level of proximity."* An editor owner adds: *"There is an initial stage where the companies look at each other in a bit of a dog-eat-dog fashion because they are more or less competitors. And then, they see that there are common synergies."*

Consequently, pre-existing personal relationships constitute the actual foundation of structural collaborations, organized around interconnected circles that transcend organizational boundaries. The historical legacy and entrepreneurial lineages stemming from Kalisto's collapse created dense networks of former employees that continue to structure professional and personal relationships. This 'Kalisto diaspora' forms the primary relationship circle, complemented by overlapping career trajectories between Ubisoft and Asobo, creating dense networks facilitating ad-hoc collaborations and talent circulation. A big studio manager illustrates this relationship-based collaboration: *"We work with Manufacture 43 on a freelance basis because we know him well. It's not because he's in Bordeaux that we work with him. It's because we know him."* A small studio founder emphasizes the strategic importance of these networks: *"Networking is really important. X (big studio) is going to have people like Daniel leaving the company and it's better for them to stay close by. It creates a virtuous circle between big and small studios."*

The second circle centres on ENJMIN cohorts, forming professional 'generations' that maintain active cross-organizational connections. Over 60% of certain studios' recruits originate from this institution, creating common technical languages and similar creative references that facilitate mutual understanding and collaboration. A third circle comprises technical communities of practice, exemplified by the ecosystem developed by Nicolas Cannasse. This technical community transcends organizational boundaries and establishes lasting developer connections through shared tools, demonstrating how technical innovation becomes relational infrastructure.

Studios engage in regular cross-subcontracting arrangements, particularly evident in collaborations between different-sized structures that optimize complementarities. The Warhammer Mechanicus project illustrates this dynamic, with console porting executed by a three-studio consortium generating €1-2 million in revenue within a regional sector estimated at €5-7 million annually. Technology and methodology transfers occur through internal conferences, cross-training initiatives, and structured feedback mechanisms. ENJMIN serves a catalytic function in these transfers, facilitating innovation and best practice circulation throughout the ecosystem.

An Angoulême studio manager describes these collaborative relationships: *"We have quite a few small synergies, which are more like synergies between small companies at the moment. But for example, we've done a deal with Shiro Games in Bordeaux. So, overall, a lot of people want to be part of the sector and work together, because we know each other well."*

6.7 Benefits & Stakeholders

The cluster is characterized by substantial diversity across multiple organizational dimensions, resulting in varied perceptions of its role among different company types. As the SO.Games managing director observes: "*You know, the 80-20 Pareto law, we're in it. 80% small structures and schools and 20% big studios [...] What happens is that we, our services, try to do them for the greatest number, for the big structures and the small ones. But there comes a time when everything we do is much more useful to the small ones than to the big ones.*"

For micro-studios and freelancers, the cluster performs a critical function in information democratization, fundamentally transforming their operational capacity. Resolution of practical challenges such as legal status selection, specialist service provider identification, and regulatory compliance generates substantial efficiency gains. The entrepreneurial catalytic effect represents a less tangible but fundamental benefit.

An entrepreneur in Bordeaux emphasizes the importance of rapid peer support: "*It's very important to have a social network for rapid feedback from colleagues, if you need a technical or HR response quickly.*" A studio owner in Angoulême describes collaborative project management: *“On a lot of projects, we have collective responses in the sense that if we don't have the bandwidth, we'll get together and that's why we've also set up all these pitching and training schemes, etc. It's because we're all moving together a lot if one of us gets a meeting with a publisher, there'll be work for 1, 2, 3 or 4 studios.”*

The network's value in facilitating institutional access is illustrated by a studio founder's experience: "*The person at BPI I was able to contact to get the file, it was done very quickly because I had because when I asked there were people who could tell me ah well it's such and such a person I'll put you in touch.*"

Intermediate companies particularly benefit from resource optimization enabled through the pooling of expensive support functions. Accelerated development facilitation includes enhanced talent access through network effects and collaborative project opportunities with other studios. The entrepreneurial spillover effect constitutes a significant though less tangible advantage.

For large companies, regional attractiveness benefits prove particularly strategic within the context of talent competition. The showcase effect generated through cluster participation becomes a recruitment tool facilitating talent attraction for candidates initially reluctant to relocate to the region. Promoting regional commitment and demonstrating corporate social responsibility addresses growing public scrutiny expectations regarding major technology companies' practices.

A major studio manager describes their approach: "*For us, the association is very much about sponsorship. But there's a real sense of purpose to certain actions. The first year I arrived, I received 450 CVs from 3rd grade trainees. We set up a SO.Games Day for schoolchildren to ease their frustration a little.*" However, another major studio manager acknowledges limited direct utility: "*SO.Games brings more added value to small and fledgling structures that need discounts to attend events. But we're good. We don't need to; we have an agent and support functions.*"

6.8 Mobilized Resources & Competencies

SO.Games operates with a total annual budget of €380,000, incorporating €110,000 in valorised volunteer contributions. Local authorities provide most of the funding, with the Nouvelle-Aquitaine Region supplying the primary subsidy, Bordeaux Métropole contributing €40,000 (recently increased), Greater Angoulême providing an additional €2,000, and Magelis funding specific initiatives. This financial architecture demonstrates the cluster's capacity to mobilize multiple institutional levels effectively.

Membership fees range from €50 for micro-enterprises to several thousand euros for large organizations, following recent revision in response to complaints from major contributors. The association currently relies on a two-person permanent staff, supplemented by several active volunteer members who play decisive organizational roles.

6.9 Organisational structure and governance

SO.Games emerged from the merger between Bordeaux Games and the Angoulême association, encompassing 108 members with a composition that reveals significant sectoral asymmetries: 83% small organizations and educational institutions, and 17% large companies. This distribution generates ongoing governance challenges between stakeholders with substantially different needs and contribution capacities.

Governance operates through a seven-member Board of Directors elected according to a system designed to balance territorial and sectoral representation. The operational team consists of 2.5 full-time equivalents, supplemented by voluntary involvement from elected leadership.

The economic model relies on balanced funding from membership fees modulated according to revenue, public subsidies representing approximately half the budget, and revenue from specific services. The cluster's recent history illustrates the complexity of reconciling diverse company interests and resources. The leadership transition from Stéphane Bonazza to David Elahee represents a fundamental strategic reorientation, revealing two contrasting conceptions of collective action. The former, representing a large Bordeaux studio, favoured a corporate and events-focused approach, exemplified by the creation of Horizon at the Grand Théâtre de Bordeaux and partnership with the Sud-Ouest media group, aimed at securing cultural legitimacy among economic and political decision-makers. The latter has developed an alternative philosophy emphasizing support for emerging companies and principles of mutual aid. This transition illustrates the inherent difficulty of combining, within a single institutional framework, a 'business' approach oriented toward growth and international ambitions with a 'community' approach focused on mutual aid and support for vulnerable members.

Governance mechanisms encompass informal adjustments, communication tools, dedicated teams, informal social control, reciprocity and solidarity values, formal conventions and committees. The primary cooperation vector operates through a decentralized communication system that constitutes the cluster's operational "nervous system." The Slack platform employs a sophisticated architecture that transcends traditional business communication tools to function as a comprehensive collaborative platform. This organizational structure includes general announcement channels, thematically specialized action groups, dedicated geographical spaces preserving local specificities, member service channels for daily mutual support, and an incubation system with a documentary knowledge base supporting new entrants. The infrastructure manages an estimated one full-time equivalent daily activity level, reflecting exchange intensity and ecosystem vitality. It coexists with complementary tools such as Discord for specific clusters and events, which segment audiences according to needs and affinities, revealing remarkable organizational sophistication.

7 THE LYON CLUSTER

Lyon is the third-largest city in France, located two hours by train from Paris, and serves as the capital of the Auvergne-Rhône-Alpes region. It has a distinguished industrial heritage dating back to the Renaissance as Europe's silk capital, earning it the nickname "Capital of Silk" due to its dominance in luxury textile production and its strategic position at the confluence of the Rhône and Saône rivers, which facilitated trade across Europe.

In the 20th century, Lyon successfully transitioned from traditional manufacturing to high-tech industries, particularly benefiting from major investments in biotechnology, chemistry, and digital technologies. The city's transformation into a technology hub was accelerated by significant public and private investments, including the development of major business districts like Part-Dieu and the establishment of prestigious educational institutions such as École Centrale de Lyon. The video game sector emerged as part of this broader digital economy development, initially anchored by companies like Infogrames (later Atari) in the 1980s and subsequently strengthened by substantial public investment through the France 2030 program, which allocated significant funding to Game Only's cluster development. This combination of industrial heritage, strong educational infrastructure, and substantial public support has positioned Lyon as one of France's most professionalized and well-funded regional game development cluster, with resources and permanent staff significantly exceeding other regional ecosystems.

Figure 14 – Lyon in France

7.1 Data collection and analysis

The data collection and analysis process were the same as for Bordeaux. Please refer to the information presented in section 6.1.

Phase	Period	Interviews
Consolidation of the analysis grid	April-May 2024	- 4 (1 key person, 3 studios) - Face-to-face interviews involving 2 researchers

Focus on the "emergence of the collective action"	Sept-Feb 25	- 10 (6 exclusively focused on the emergence)
General questioning	March-June 25	- 12
Attendance at the Game Only General Assembly	April 25	- Attendance of 2 researchers

Table 11 – Data collection in Lyon cluster

To analyse the results and produce this document, we used the analysis grid - translated into a general template - which was discussed and proposed to all the partners. The researchers each analysed a selection of interviews separately to produce a collective document, which then formed the basis for writing the report.

7.2 Lyon cluster emergence & genesis

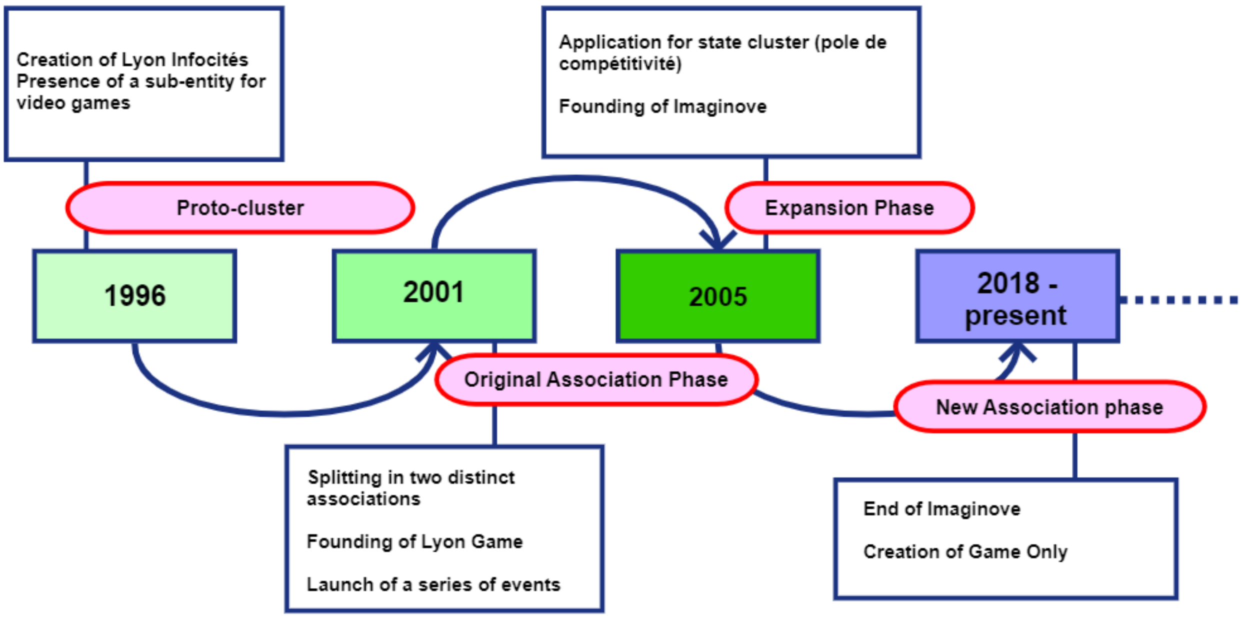

Figure 15 – Lyon cluster timeline

7.2.1 Origins of the ecosystem & the legacy of Infogrames (1980-1997)

The history of the Lyon video game cluster began in the 1980s, with the foundation of Infogrames Entertainment, in 1983 by Bruno Bonnell, an emblematic company in the history of the French video games. All interviewees agree that Infogrames contributed to make the city the capital of French video games during the 80s-90s. *"Lyon is the cradle of video games in France. Well before, in the 80s-90s, it was still the capital of video games, thanks to the presence of Infogrames / Atari."* Infogrames grew rapidly, notably through an ambitious international acquisition policy; it went public in 1996 and employed several hundred people.

The company played a triple role for the ecosystem. It acted as an industrial locomotive, a talent generator, and an informal entrepreneurial incubator. It stimulated the formation of an ecosystem of small studios and subcontractors, suppliers, and related services. The sharing of a common professional origin (Infogrames), the similarity in corporate cultures, and the shared understanding of the technical and commercial challenges of the sector among a core group of the founders of these small structures, along with their regular informal meetings, fostered their collaboration and an awareness of their community of interests. According to one of the founders: *"It's fortuitous. There wasn't, how to say, at the beginning all that, there wasn't any idea other than to say we need to be together as studios in the region, in Lyon."*

1996 also marked the creation of Lyon Infocités, a generalist associative structure supported by Lyon public authorities to promote technological innovation in the city. The association brought together companies in information technology and digital entertainment. The video game sector occupied only a marginal place within this association. Nevertheless, this structure offered a formal framework within which the first core of local independent studios founders, mostly former Infogrames collaborators, created a "Video Game Club” and initiated collective actions aimed at giving greater visibility to the sector. The association helped the members to mobilize public fund and develop their collective presence at international trade shows. Thus, in 2000, about ten members of this small association represented the Lyon sector at the international trade show in Los Angeles, marking a first step in the structuration of the cluster. *One of the first founders illustrates these first interactions as follows: "The first meetings – everyone knew each other through Infogrames. After a few meetings, we asked them if a federation into an association would interest them. Collective presence at trade shows came up. With UbiFrance, collective presence at the LA trade show, and at Cannes. That initiated collaboration between structures."*

In parallel, in a landscape where training programs specific to video games were still rare, École Emile Cohl was created in Lyon in 1994 to train a new generation of sector professionals, particularly in graphics and animation.

7.2.2 Triggering factors and crystallizing effect of the crisis (1997-2001)

The first collective actions that gave substance to the cluster were developed progressively before gaining momentum following several changes that served as catalysts. The first catalysing effect lay in the interest of public actors. The first collective actions and revendications of the video game studios found resonance with the local public authorities, allowing them to fit into a larger ambition carried by the city of Lyon to restore its image on a national and international scale. *As two studio managers among the first founders of the club testify: "We had to make ourselves known, sell the city and do business with us. To restore Lyon's reputation. That's why we wanted to call ourselves the dream weavers. It gives you one more label." "We were the dream weavers, since it's a bit like Lyon's silk industry originally"*

In 2001, the municipal elections contributed to accelerate the recognition and legitimation of the role of the association and the structuring of its collective actions. The founders of the Video Games Club seized this opportunity to begin a lobbying dialogue with the political candidate and emphasize the importance of the sector at local and national levels. *One interviewee among studio founders* *remembers: "We had all agreed [...] since it's the municipal elections, we'll see if we can meet all the potential mayors and see how we could promote our industry within the city of Lyon."*

At the international level, the global crisis of 2001, a consequence of the Internet bubble and the September 11 attacks, also played a catalysing role and propelled the collective organization. Considerably weakened by the sudden halt of financial flows, several large companies that had made the global success of a "French Touch" experienced difficulties. Many companies went out of business while skilled professionals left to go elsewhere. Infogrames, in a critical condition, was forced to sell off a large part of its assets in 2002.

In Lyon, these successive restructurings freed many experienced talents who created their own studios. This generated a constellation of small companies sharing a common culture: Adeline Software (creators of *Alone in the Dark*), Arkane Studios (Creators of *Dishonored*), Eden Games (specialized in racing games), Étrange Libellule (artistic studio), Ivory Tower (future Ubisoft studio), Artefacts Studio. Even though they came from a common matrix, these studios would develop diversified creative approaches. With this national crisis, the vulnerability of many indie small studios increased, thus reinforcing the necessity of collective organization. As highlighted by this quote from one of the founders of the first indie studios: *"At one point, globally, publishers stopped paying independents [...] We spent our time, actually, when we saw each other [meeting up], to know if so-and-so had paid the other and to know if we could slip in to ask for an advance."*

Small structures already suffering from isolation when facing publishers saw their situation worsen. Unfavourable commercial practices (payment delays that could reach several months, unilateral contractual modifications, requests for free work in the form of unpaid "demos") affected heavily the independent studios while the absence of professional unions, employer organizations, or regulatory bodies left developers isolated facing publishers and limited their capacity to influence sectoral public policies.

Paradoxically, this situation reinforced the solidarity between studios and exacerbated their need for support. The collective organization was strengthened and became more structured. A split occurred the following year. While Lyon-Infocités continued its initial mission, a new association labelled “Lyon Game” emerged in 2002, becoming the first professional association devoted exclusively to video games in France. Its initial objective was to create collaborative and collective dynamics within the Lyon video game sector. Its founders were recognized figures and seasoned professionals with charismatic personalities who created successful games. Their leadership gave the association strong legitimacy from its beginnings and encouraged other small studios to adhere. These two quotes by two studios managers who contributed to this emerging phase illustrate the point: *"The presence [of the first founder] was decisive. You don't enter a sector like that if you're not introduced by a sector actor, himself from Infogrames, creator of an emblematic horror game." "We were interested in artisans and not the big ones. Those who wanted to go beyond Infogrames [which] was present by its absence. We had nothing against Infogrames. It wasn't an official sponsor. Yet, there was Infogrames' shadow hovering every time."*

The association reached 25 studios members and was essentially supported and managed by "small" independent studios. Despite being omnipresent in the local landscape, Infogrames, which became

Atari, was not part of the association. The crisis context reinforced the association's legitimacy and helped to leverage its first funds. Thus, during its first year of existence, Lyon Game organized a series of structuring events (Game Week, Game Communication, Game Party, Lyon Game Conference and Game Connection). They aimed to strengthen links between studios, to foster cooperation, and to give visibility on a national scale. Among these events, Game Connection quickly became an essential appointment for the video game industry in France and still maintains a place in the sector's professional calendar today. Over the years, the association expanded. In 2004, it reached 215 members.

7.3 Local Industry features & components

7.3.1 Geographic scope and territorial distribution

The Lyon cluster is organized according to a concentric logic. The geographic heart of the cluster is anchored in the Greater Lyon (including Villeurbanne) which serves as the main epicentre. This concentration results from Infogrames' legacy and creates a relatively high density of studios within a small perimeter. Several other cities in the Rhône-Alpes region are also active in the audiovisual and video game sector as illustrated in the following figure.

Figure 16 – Main localizations of video games studios in Auvergne-Rhônes-Alpes

Many of the studios in these cities (Annecy, Saint-Etienne...) are active members in Game Only, the main professional association driving the cluster. The following table presents some of the main companies outside Lyon city. Annecy hosts Ubisoft Annecy, Valence develops animation with Folimage, and the IUT of Puy-en-Velay (Institut universiaire de technologie, Technology university) provides expertise in computer graphics training.

Membership in the formal cluster - Game Only association - is conditioned by geographic criteria: establishment in the Auvergne-Rhône-Alpes region, which defines the eligibility to public schemes (PDI - International Development Plan, Regional training fund...). It is accessible in some cases to extra-regional actors but only on specific projects. Despite being geographically distant, many studios from these peripherical cities are actively involved in the cluster. Several of them endorse formal roles the governance bodies of Game Only. They contribute also to the activities of network animation and the different ad hoc consultative meetings organized by the association.

7.3.2 Cluster demographics: key actors & stakeholders

Apart from the companies specializing in game development (studios, publishers), which are the main engine of the collective action, the cluster involves several related players that gravitate around the video games sector and provide various services ranging from contracting to providing production technologies, including training or legal and administrative services. Apart from Game Only, which brings together the main bulk of Lyon video game actors, the cluster involves also a second associative structure, Lyon Game Dev, also operating for local video game development with a smaller scope of actions, resources, and roles. Finally, public authorities constitute a third group of key stakeholders who act as funders and institutional facilitators in close collaboration with the local professional associations.

	Private companies	NGO	Public authorities & institutions
Local & regional level	• Studios & publishers • Training organisms & schools • Service & technology providers	• Game Only • Lyon Game Dev	•**ATLAS & AFDAS** (organizations in charge for collecting and managing companies' contributions to vocational training) •**DREETS** (Regional Directorates for the Economy, Employment, Labour and Solidarity) •**DRAC** (Regional cultural affairs departments)
National level		• **SNJV** • **SELL** • Other regional professional associations (Capital Games, Game IN)	• **CNC** (National Center of Cinematography)

Table 12 – Key stakeholders of Lyon cluster

7.3.2.1 Associative structures and Game Only as a local engine

Created in 2029, Game Only is the main professional association representing the video games local companies and driving their collective action. Currently, it brings together 120 members representing more than 90% of regional studios and acts on their behalf, locally and at national and international levels. In addition to local network animation, it provides multiple services to its members and endorses the role of an economic development agency. In addition to Game Only, another association "Lyon Game Dev" also operates in the cluster. It plays a lesser role. On several occasions, respondents have described it as an association of "developers" and employees which is different from Game Only acting more as an association of "employers." Thus, the coexistence of Game Only and Lyon Game Dev is some form of spontaneous specialization between "employers" and "employees." Game Only functions as a formal structure oriented toward "leaders/founders and managers" with a business and institutional orientation and a focus on the defence of the studios' economic interests. It is “governed by studios and for studios”. On the other hand, Lyon Game Dev constitutes an informal network oriented toward "developers/employees" with a technical and social orientation and a major focus on the facilitation of informal exchanges and gatherings of professionals and amateurs.

7.3.2.2 Video Game Companies

The companies operating in the video game sector present a significant diversity. In addition to the studios and video game creators with various specializations, strategic positioning and business models, the territory also hosts several publishers.

1. Large International Companies	
Specificities and Roles in the Cluster	**Flagship Companies**
• They are mainly creation studios and publishers, which are subsidiaries of major multinationals. •These structures bring significant institutional credibility but reveal an asymmetry in the benefits derived from cluster membership • Their selective use of collective tools and decision-making logic deferred to headquarters limits their engagement in mutualization mechanisms. •They adopt a particular stance of "benevolent" participation without real dependence on cluster services.	**Arkane Studios** (~300 employees, Microsoft property) embodies the creative and technical reference, radiating internationally while maintaining its Lyon roots **Ubisoft** deploys its Lyon and Annecy studios with several hundred employees, bringing an industrial dimension to the ecosystem **Bandai Namco Europe** establishes its European headquarters in Lyon, creating an international editorial dimension
2. Mature Creation Studios	
Specificities and Roles in the Cluster	**Flagship Companies**
• SMEs (15-50 employees on average) constitute most cluster companies and the segment which is most involved in collective actions and governance • These structures benefit most from mutualization while actively contributing to the functioning and strategic orientation of the cluster.	**Old Skull Games** (~80 employees) multi-platform specialist operating since 2012 with a **hybrid strategy**, combining F2P mobile games and PC/consoles **Artefacts Studio** (50-80 employees) founded in 2003 in Villeurbanne (Lyon), specializes in tactical RPGs with a hybrid economic model (Subcontracting, co-development and creation of proprietary licenses)
3. Entrepreneurial pool	
Specificities and Roles in the Cluster	**Flagship Companies**

•These clusters involve emerging structures and micro-enterprises, notably individual freelancers, which nourish the collective innovation dynamic but experience high mortality rates. •The constant flow of creations via the Let's Go incubator (6-7 new projects annually) ensures demographic renewal and organizational innovation of the ecosystem.	**United Beats** (Julien Millet's studio, 1.5 years of existence) represents the new generation of entrepreneurs **Dowino** (cooperative company) experiments with alternative models with participatory governance and specialization in impact games **Gameleon** (<10 employees)

Table 13 – Typology of the video games companies

The differentiation of cluster companies also relates to their positioning in terms of platforms.

Console/PC Studios	A large part of the older studios operates for the console/PC market. As such, they evolve in long development logics, editorial partnerships and project financing, requiring significant investments and sophisticated risk management.
Mobile Studios	The rise of mobile video games has favoured the emergence of new specialists in this platform. They operate according to models requiring massive marketing investments for user acquisition, with shorter development cycles but critical discoverability challenges.

Table 14 – Studio specificities by platform

The diversity of companies also relates to game genres, markets (BtoB or BtoC with serious games) and positioning on the value chain (studio, publisher, service provider...). In terms of content of the produced games and their orientations, a relatively important part of the studios claims an "auteur" approach to creation that is fully assumed. This approach induces a constant search for original content and high levels of creativity. It directly influences the collective strategic choices of the cluster and is accompanied by technical innovations, notably the development of proprietary engines by studios, and involvement in collaborative R&D projects.

7.3.2.3 Support and training organizations

The cluster also hosts numerous "third-party" actors, who have a "partner" status in Game Only's membership structure. This category includes service providers and technology suppliers, training organizations. Many of them play a key role and are actively involved in the cluster's common collaborative activities. The Auvergne-Rhônes-Alpes region has two main types of training organizations: (i) on one side, there are private training organizations including the regional flagship École Émile Cohl, which maintains its historical role as the main artistic training organization or Bertie Formation, a more recent organization, created by Game Only. (ii) On the other side, there are few public training organizations. The IUT of Puy-en-Velay which contributes to computer graphics training and is strongly involved in collective action despite the geographical distance is an exception. The cluster includes also several specialized service providers who bring specialized expertise in video games (legal, accounting, insurance...) and technologies necessary for development professions.

7.3.2.4 Public authorities

The Lyon cluster benefits from the support of a composite institutional ecosystem which is the result of progressive construction and lobbying process. These public authorities play a key role in financing the collective action of the cluster, by (i) partially financing Game Only's operations and (ii) through subsidies and direct support mechanisms for the sector's actors. These public authorities are also facilitators in the institutionalization and structuring of the video game industry.

The architecture of this institutional ecosystem shows several nested levels creating a complex multi-level institutional ecosystem. The French model of public support and its decentralized approach grants regions and metropolises a central role in the allocation of public resources and the definition of territorial strategies. Consequently, the local authorities have expanded autonomy regarding local economic development, professional training, and innovation support.

LOCAL SUPPORT AT THE CITY-LEVEL	
"Grand Lyon" Metropolis	It provides institutional support and territorial networking, creating favorable conditions for local development.
Local OPCO (Skills Operators)	This local organization approved by the government to support companies' professional training, has developed through AFDAS and ATLAS specialized professional training financing (30%-70% distribution).
DUAL REGIONAL STEERING	
DREETS Regional Directorates for the Economy, Employment, Labour and Solidarity	It focuses on the cultural and creative vision with a dedicated video game aid fund endowed with €800,000 annually - a unique scheme in France - and Game Only's annual subsidy (€60,000). This directorate also develops specific financing for professional training, recognizing the sector's particular needs.
DRAC Regional cultural affairs departments	It provides €20,000 recurring annual funding plus specific project calls, creating a structured relationship with regional innovation policies. It supports international development via the International Development Plan (PDI) reimbursing 50% of professional trade show participation costs, and coordinates with classic regional economic schemes.
NATIONAL SUPPORT	
France 2030	This strategic investment plan launched by the French government to support innovation, ecological transition and reindustrialisation in key sectors is the main funder for major projects, with €700,000 contribution to the cluster activities.
CNC (Cinematography National Center)	It provides studios, at the national level, with certain aid mechanisms such as FAJV (Video Games Support Fund) and tax credits. The structure has also established, in cooperation with local sector actors, aid schemes for creation and approval of innovative tools.

Table 15 – Types of public supports

The Auvergne-Rhône-Alpes region intervenes as a funder, with a mixed approach and dual steering by two directorates under two different ministries (Economy & Culture) that recognizes the dual cultural and economic nature of the video game sector. This appears to be a Lyon specificity. Similarly, the Lyon ecosystem has captured various major national funds under programs such “France 20230” or through structure such as CNC and its main aid mechanisms such as FAJV.

7.3.3 Collective identity & DNA

The analysis of the cluster's identity and what makes it specific through the perspective of its stakeholders reveals an amalgamation of several values stemming from several identities: (i) identity values linked to the local and national geographic context, (ii) certain values specific to the video game sector (iii) and other values more specific to the cluster's history and its intrinsic evolutionary trajectory.

The various crises that the sector has gone through in combination with transformations of institutional and organizational frameworks for collective action (Lyon Games, the informal associative collective, to the competitiveness cluster, Imaginove, and then the formal professional association Game Only) have fostered multiple questioning about the collective identity of Lyon video game developers, and sparked processes of construction and reconstruction of this identity.

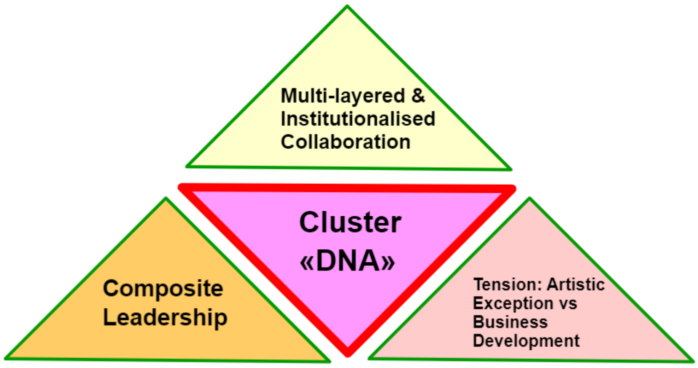

Figure 17 – Lyon cluster DNA

7.3.3.1 Multi-level and institutionalized collaboration as an identity value

Collaboration appears as a characteristic of the video game cluster in Lyon. The absence of direct and classic competition between the companies is a distinctive feature of the video games industry. Collaboration is also the foundation of a cluster. But collaboration within the Lyon cluster presents several singular characteristics linked to a progressive transformation of actors' professional identity and a redefinition of the notion of competition and cooperation. From the 2000s, the local video game companies in Lyon experienced a transformation from a "culture of secrecy" designed to "protect creation" towards an assumed collaborative model as evidenced in this quote: *"We help each other out mutually, there's still a climate of trust because actually we realize we're not on the same types of games, so we can really talk more about colleagues than competitors." O.G*

This mutation is illustrated by the multiplication of collective actions as well as the progressive opening of workspaces, the sharing of sensitive commercial information, and the creation of physical and virtual spaces for sharing knowledge and resources. The weak institutionalization of the sector, the multiple crises it has gone through locally and internationally, and the strong uncertainty weighing on its production, have contributed to an acute awareness of the necessity of collaboration between the different companies.

The local collaboration in Lyon video games cluster is also formal and strongly institutionalized. This is due to the specificities of the organization of the French administration public organization and to the decentralization practices in economic development, professional training, and innovation support. Collaboration with public authorities and other local and national institutions is a key issue for all video game cluster in France, who must juggle between the sector's economic requirements and needs of their members on the one hand and, on the other hand, the imperatives and objectives of public authorities. The search for appropriate distance and posture regarding public authorities strongly conditions the cluster's organization, its collective strategies, and its identity. This value is common to the French video game clusters and their professional associations in several regions who are confronted with the necessity of establishing institutional dialogue, educational work and lobbying actions towards public authorities. Institutional collective action thus intervenes at regional levels but also at national and inter-cluster levels via instances like SNJV and SELL.

At Game Only, the general director devotes 80% of her time to public affairs and maintaining relationships with all territorial levels (metropolis, region, State, Europe). The establishment of institutional dialogue has progressively been formalized to become collective know-how of Game Only. This know-how leads to the capacity to "translate" entrepreneurial needs into political projects coherent with public orientations, creating an alignment of interests around convergent objectives of territorial economic development and cultural influence. The collaboration is bi-directional. The association brings also its sectoral expertise to help public authorities optimize the effectiveness of the public policies and their programs.

7.3.3.2 A compromise between art & business

The search for balance between a pragmatic industrial approach to entrepreneurship and an "artistic" approach, claimed by an important number of the studios constitutes also an identity marker of the Lyon cluster. The cluster's history and the "auteur" approach to development, fully assumed by a large part of flagship studios like Arkane Studios, Artefact or ActeZero, have profoundly influenced the ecosystem's collective identity. This creative philosophy leads several studios to deliberately privilege "artistic integrity" over purely commercial logics. A founder of a leading studio in the region testifies: *"I've always had a big, big artistic integrity, a big passion for what I do, people feel it, and I'm not here to make money, I'm not here to do something I don't want to do." R.C*

This specificity is not uniquely Lyon-based but stems from a certain national approach to creation crystallized in the concept of "French Touch": *"Only the French work for honour, because we're made like that (...) The French, they work for the beauty of the game. It's Cyrano de Bergerac. So, as a result, we do things for the beauty of gestures" H.C.*

The cluster, and its driving regional association, is a collective space where this assumed artistic identity must coexist with a more pragmatic business posture and a capacity to mobilize public and private financing schemes to ensure the economic viability of the different companies and members of the association. This is reflected in the cluster's strategic decisions and the choices of its governance and management.

7.3.3.3 Multipolar and personalized leadership

One of the particularities of the Lyon Cluster lies in its leadership. By leadership we mean the capacity of individuals or organizations to guide, coordinate, and mobilize collective efforts within a geographically concentrated network of actors—such as firms, institutions, and support organizations—to drive innovation, build trust, and sustain development and competitiveness. Despite the changes in leadership actors and styles, there are many persistent features which define the cluster and contribute to its identitarian work.

From the first collective actions and throughout its evolution, the Lyon cluster has experienced formal and multipolar leadership, around several types of figures and several sources of legitimacy. The figure of the collective association facilitating democratic governance without holding direct hierarchical power over its members has been at the centre of collective action. The management of these associations has always involved a dual structure consisting of active video game professionals, often endowed with certain charisma and federation capacity, and operational management bodies involving people not coming directly from the sector. They are senior profiles with project engineering expertise who are required to master institutional lobbying work and enhance the operational efficiency of the collective activities. Nevertheless, leadership has often been embodied and associated with a few flagship figures (Hubert Chardot, Pierre Carde, Ludovic Noel, Mathilde Yagoubi...). Moreover, periods during which collective action experienced difficulties are associated with leadership dysfunctions more than exogenous factors. A former Game Only board member testifies about Imaginove: *"After all, a competitiveness cluster's success is often linked to its director. And so, the person who had created it was very dynamic, with a vision, a lot [of energy] and he drove this competitiveness cluster for five or six years. He left and then there was a succession of directors. And you really need to have a director who can handle it and who has a vision because when you bring together several industries that have creative problems but, still, very distinct problems, well it's very hard to hold them together and it quickly went wrong."* This was echoed by another studio manager: *“And there, again, this is what I was saying about the director. Since Mathilde is a very, very dynamic director, so Game Only has become one of the most dynamic clusters in France with Paris, I think. So that's the notion of a cluster depending on a few people at the head who have a lot of energy, it makes a hell of a difference."*

The importance of interpersonal relationships to facilitate multi-level collaborations and manage administrative complexity requires that cluster leaders be endowed with certain relational legitimacy. This personification of leadership generates operational efficiency but simultaneously constitutes a fragility factor. Thus, the associative structure and its democratic formal process of designing leaders via elective bodies (Board of Directors, General Assembly) is supposed to remedy to prevent this risk and to remedy to the low participation of all members and adherents in the decision-making processes and the de facto predominance of the permanent team in strategic orientation.

The analysis also reveals a form of co-leadership with funders from public authorities who exercise significant influence and have certain steering power via their financing criteria and their participation in the Board, without however having formal and direct vote and decision-making rights. Through the different phases of cluster evolution, the leadership, as a collective actor, and the steering bodies of the association have worked to develop lasting trust relationships with institutions, while preserving the collective actor's decision-making autonomy.

7.4 Cluster Evolution

The evolution of the Lyon video game cluster over nearly forty years reveals a cyclical process, punctuated by critical moments that have been marked by actions of creation and dissolution of various collective action frameworks: Lyon Games, Imaginove, then Game Only (cf. Figure 15).

7.4.1 Cluster Evolution: repeating cycles

The cluster's trajectory is marked by recurring cycles of crisis and institutional transformations. The drivers of these crises and changes are both endogenous factors to the cluster (entrepreneurial spin-offs, internal cultural evolutions...) and exogenous factors (sectoral economic crises, public policy mutations, technological revolutions...). Thus, the cycle observed during the cluster's emergence phase (see Figure 15) and which gave impetus to collective actions and led to the creation of Lyon Games was subsequently repeated, allowing us to distinguish three other phases in the Lyon cluster's development.

7.4.1.1 Institutionalization and professionalization (2005-2010)

The year 2005 marks the transformation of Lyon Games into the "competitiveness cluster" Imaginove. This recognition modifies collective organization by introducing a professionalised and formal structure with public-private governance allowing the recruitment of permanent employees, the establishment of a formalized budget, and the development of structured work processes. Integration into regional public policies confers to Imaginove a status as a recognized actor and main interlocutor in territorial economic development strategies, facilitating access to public funding and institutional legitimacy. Imaginove progressively develops expertise in multi-actor coordination, European projects, and public affairs, diversifying activities through collaborative research projects, pooled training programs, and international development actions. The structuring as a competitiveness cluster sees also an expansion of the scope of action beyond video games and the inclusion of cinema and animation sectors. This expansion brings substantial funding and institutional legitimacy but progressively dilutes video game specificity.

7.4.1.2 Progressive decline (2010-2018)

From 2005 to 2010, Imaginove experienced significant developments that made it a propeller of collective action benefiting the local video game basin. But from 2010, the cluster experienced several difficulties and a change in leadership and strategic vision that had profound impacts on the cluster and on local collaboration dynamics. The multisectoral approach in collective action generated growing questioning about the adequacy of implemented projects, working methods, and strategic orientations with the specific needs of video game studios. Entrepreneurs identify several factors of dissatisfaction and blockage including institutionalized governance and the rigidity of certain working mechanisms. Formalised procedures and public authorities' involvement slowed down collective decision-making processes in a sector characterized by short technological cycles and a need for rapid adaptation. Video game entrepreneurs observe a growing distance between proposed services and their daily operational concerns. One studio founder details this point: *"We were fairly moderately satisfied in terms of results and tools they could offer us [...] we had trouble finding links that unite us and direct us toward common goals."* As expressed by the last managing director of Imaginove: *"There was a real desire for strong video game identity, on one hand. On the other hand, Imaginove was born as a cluster and competitiveness pole [...] it was also necessary to adapt the cluster's animation in order to respond more to the imperatives imposed on the competitiveness cluster."*

Imaginove becomes the scene of growing tension between the search for increased operational efficiency and progressive distancing from video game-specific concerns. This tension fuels reflection on sectoral identity and collective action effectiveness. It also translates into decreased engagement of private actors in the cluster's governance and activities. This period sees also the emergence of parallel informal initiatives exploring new forms of organization adapted to the video games sector specificities and needs.

7.4.1.3 Sectoral restructuring (2018-present)

Imaginove is dissolved in 2018. In its wake, and very quickly, Game Only emerges, which operates a reorientation exclusively centred on video games, abandoning the multi-sectoral approach. The name "Game Only" carries this strong claim. The new structure adopts governance "by and for studios," reserving strategic decisions for sector companies. This last and ongoing phase combines the entrepreneurial spirit of the origins with assumed professionalization. The evolution of association memberships and the progression from 18 founding members in 2018 to 120 members in 2024, covering more than 90% of eligible regional studios, confirms the need for a structure exclusively dedicated to the sector and its needs. Game Only maintains the institutional expertise developed during the Imaginove period while adapting the organization to the operational specificities of the video game sector.

7.4.2 Cluster evolution: critical moments and structuring factors

The following tables summarize the main critical moments and structuring factors of change for each of the key phases of the cluster's evolution.

Phase 1 (80 – 97)	**Gestation & Informal Incubation**
Characteristics & critical moments	Progressive formation of emergence conditions around Infogrames as founding matrix favouring the development of a talent pool and common corporate culture.
Structuring factors of change	• Infogrames' pooling effect creating natural geographic concentration • Organic spin-off movements at normal pace • Development of synergies within the local creative ecosystem (École Émile Cohl) • Progressive constitution of a skilled professional network sharing cultural codes and technical expertise
Strategies & collective actions	• Sporadic and informal exchanges between peers
Phase 2 (97 – 2002)	**Crisis & organic spark**
Characteristics & critical moments	• Convergence of catalysing factors creating conditions for spontaneous organization • Brutal economic shock revealing sectoral vulnerabilities

Structuring factors of change	• Major wave of entrepreneurial spin-offs and Infogrames restructuring freeing experienced talents who create their own studios (Adeline Software, Arkane Studios, Eden Games...) • Suspension of payments by publishers creating generalized liquidity crisis • Internet bubble burst (2001) + September 11 attacks • "Massacre" of independent studios illustrating the sector's structural fragility
Strategies & collective actions	• Progressive collective awareness of isolation facing publishers' unfavorable commercial practices (payment delays, unilateral contractual modifications) and growing agreements about sectoral vulnerabilities • Strengthening of solidarity mechanisms between studios and development of collaborative culture based on mutual aid • Lobbying strategies and informal collaborations with public actors subsequently leading to development of political representation and economic mutualization services

Phase 3 (2002 – 2005)	**Structuring of the collective action**
Characteristics & critical moments	• Development of collective activities and institutional empowerment.
Structuring factors of change	• Public interest and local political support for the sector (Grand Lyon...) • Organizational catalyzing effect via video game integration into Lyon Infocité, avoiding the pitfalls of ex-nihilo creation
Strategies & collective actions	• Development of collective activities and institutional empowerment leading to the scission with Lyon Infocités and the creation of Lyon Games a formalized profesional association with democratic governance • Creation of reference events (Game Connection) • Development of regular ecosystem animation activities (afterworks, training...)

Phase 4 (2005 – 2010)	**Extended Institutionalization & Professionalization**
Characteristics & critical moments	• Obtaining "competitiveness hub" status and creation of Imaginove • Dissolution of Lyon Games & absorption of its activities
Structuring factors of change	• National public policy favouring the development of "competitiveness hubs" and their direct public support in a logic of public-private collaboration and steering • Increased professionalization of the collective with recruitment of permanent employees, formal budget structuring and development of common work processes and routines
Strategies & collective actions	• Thematic expansion and inclusion of other sectors in collective action scope (cinema, animation, video games) • Development of institutional collaborative expertise

	• Development of inter-sectoral collaborative research projects

Phase 5 (2010 – 2018)	**Decline & desalignement**
Characteristics & critical moments	• Progressive loss of Imaginove's legitimacy among creative entrepreneurs and founders involved in the cluster.
Structuring factors of change	• Sectoral dilution due to the multi-sectoral approach creating inadequacy with video game-specific needs • Bureaucratic heaviness with decision-making processes too slow for an agile sector
Strategies & collective actions	• Growing criticism of Imaginove's general orientation and critical diagnosis of structural causes of decline • Progressive disengagement and decreased involvement of private actors in the cluster's governance • Emergence of parallel informal initiatives

Phase 5 (2010 – 2018)	**Renaissance & Specialization**
Characteristics & critical moments	• Creation of Game Only marking a return to sectoral fundamentals.
Structuring factors of change	• Return to pure sectoral logic and abandonment of diversification to focus exclusively on video games • Governance "by and for studios" and exclusion of other actors from strategic decisions
Strategies & collective actions	• Enrichment of collaborative projects and service offerings with major local and international projects aimed at developing sectoral tools (JYROS, Bertie Formation) and reducing dependence on public funding sources

Table 16 – Critical moments and structuring factors in the evolution of Lyon Cluster

The current period confronts Game Only and the cluster in general with new structural challenges that test the resilience of the developed collaborative model currently adopted in the cluster. The sector is going through a sectoral economic crisis that materializes through the closure of several studios in 2024-2025, directly reducing the membership base and impacting the association's self-financing resources. In parallel, accelerated technological evolutions - artificial intelligence, blockchain, virtual reality - require continuous adaptation of skills and economic models, creating new needs for support and training. The emergence of societal issues is also transforming the cluster's environment: progressive integration of social and environmental responsibility concerns (illustrated by the development of the JYROS tool), rise of unionization with the creation of a workers' union (STJV, Syndicat des Travailleurs du Jeu Vidéo), in addition to SNJV and SELL and with mixed demands, and generational evolution of professional values that question traditional managerial models.

7.5 Collective actions & services

7.5.1 Progressive construction of collective action

The collective actions of the Lyon cluster have experienced progressive structuring and enrichment that reflect the ecosystem's maturation and the evolution of sectoral needs. During the Lyon Games phase (2002-2005), activities focused on essential collective survival functions: representation and concentration to counterbalance publishers' dominance, mutualization of participation costs in international trade show, and informal ecosystem animation through networking events. The Imaginove period (2005-2018) marks a first diversification with the development of collaborative research projects, pooled training programs, and structured international development actions, benefiting from professionalization and funding linked to “competitiveness hub” status.

The creation of Game Only (2018-present) generated and accelerated a systematic service diversification, moving from a few fundamental actions to an expanded portfolio of six main intervention domains. This expansion is illustrated by the creation of ultra-specialized services like the “HR Club” responding to human resource structuring issues, the “Let's Go incubator” for entrepreneurial support, or the development of innovative sectoral tools like JYROS for ecological transition. The association today develops diversified professional clubs (HR club, CFO Club being structured), professional training programs via Bertie Formation, and carries prospective projects on artificial intelligence impact and quality of life at work.

This comprehensive diversification presents substantial advantages: it responds to the major needs expressed by the maturing local ecosystem, creates diversified revenue sources reducing dependence on public funding, and positions Game Only as a national reference meta-organizational actor capable of carrying sectoral innovations. However, this expansion also generates significant challenges including the risk of effort dispersion and efficiency dilution, increasing complexity of operational management for a team of eight permanent staff, and constant tensions between a pragmatic opportunism necessary to seize available funding and the actual delivery capacity of the cluster. As observed by a board member, this "growth crisis" creates operational overload that questions the model's sustainability and requires permanent arbitration between project ambition and available organizational capacities, illustrating the scaling challenges of collective organizations during accelerated expansions.

7.5.2 The Range of Mutualised Actions

A large part of collective action is developed within Game Only and steered by its governance structure and bodies which offers a diversified range of collective services in response to local sector actors' needs.

7.5.2.1 Institutional Representation

The representation function constitutes Game Only's main activity, mobilizing approximately 80% of the general director's working time. *"More particularly, my work is very oriented toward public affairs. [...] almost daily, my work is to sensitize all public authorities with whom we can work on issues specific to the video game industry here in Auvergne-Rhône-Alpes" expresses Game Only general director.*

This activity positions the cluster as a reference interlocutor with institutions at different scales, from local to European level. The absence of organized collective representation (professional unions, employer organizations...) and regulatory bodies comparable to other creative sectors was indeed one of the main motivations in the initial developments of collective action at the cluster's beginnings. This function goes beyond simple lobbying and aims to develop long-term political influence capacity, illustrated by certain concrete achievements such as the implementation of the International Development Plan (PDI), the creation of the regional aid fund endowed with €800k annually, and safeguarding of the video game tax credit during national budgetary discussions. This "education" mission also aims to have video games recognized as a legitimate creative industry, facing persistent prejudices in certain institutional spheres, which nevertheless tend to diminish with institutional awareness of the sector's strategic and economic interest.

7.5.2.2 Commercial and International Development

The organization of prospection missions in different countries and collective presence at international trade shows are among the first activities provided by the cluster animation association. Game Only, and the different associations that preceded it, serves as a "centralizer" and "redistribution mechanism" for public aids and subsidies directly intended for local video game actors. These activities particularly benefit medium-sized structures that would not have the means for autonomous presence of equivalent quality in these crucial international markets. The International Development Plan (PDI), one of the Region's most important mechanisms, administered by Game Only, thus facilitates the access of local studios to international markets. This program reimburses 50% of participation costs at major international trade shows such as E3, Gamescom, GDC ... and covers all regional companies, whether they are association members or not. This mutualization divides individual costs by 3 to 5, individual participation going from €15-20k to €3-5k in collective mode, making events that would be prohibitive individually accessible to small structures. Beyond the economic dimension, this collective presence creates territorial visibility that exceeds the sum of individual visibilities and reinforces each studio's credibility.

7.5.2.3 Ecosystem Animation

The development of Game Only's member community and the densification of exchanges between them also constitutes one of the key collective actions. This objective crystallizes through different formats. Game Only organizes regular events (after-works, side-events during general assemblies, professional days, thematic evenings...) that offer meeting opportunities for professionals with schedules constrained by intensive production phases. *As stated by Game Only board members: "Social events are moments when people with complicated schedules have a parenthesis to discuss needs. This creates a breathing space."*

This function also relies on persistent exchange spaces to favour continuous information circulation (calls for tenders, regulatory evolutions, market data), sharing of subcontracting opportunities between studios according to specialties and activity peaks, and facilitation of recruitment through mutual knowledge of available profiles. Geographic proximity also favours an informal culture by creating lasting social bonds.

7.5.2.4 Professional Support

Professionalization support and assistance to business leaders and executives is a mission that has expanded over time and today takes the form of several services provided by Game Only. Two flagship activities supporting human resource management have been implemented. Bertie Formation is a training offer created jointly with Capital Games (professional association animating the video game cluster in Île-de-France) to respond to identified deficiencies in a sector where "*executive education of collaborators is not identified as a priority*" according to the interviews with ATLAS and AFDAS representatives. The interviewee explains "*They have their production pipeline that means when they're in it, no one can be taken out.*" She attributes this to "*a lack of human resource structuring*" and notes "t*hey have scarcely recourse to professional training even though they need it*." The issue is described as fundamentally "*cultural, meaning these are structures that don't yet have that regular relationship with professional training*" and that training is still treated "*when there is time*" rather than as a strategic priority.

Bertie Formation, an autonomous organization that reinvests its profits in its founding associations (Game Only and Capital Games, the regional association steering and animating the video games cluster in Ile-De-France region), illustrates an entrepreneurial approach to mutualization that generates revenue while serving collective needs. Even though access to Bertie training is paid, rates remain advantageous compared to other similar content types and qualities.

Similarly, the "HR Club," an internal community of practice, constitutes a model of expertise mutualization: 20 active HR managers for €400/year benefit from biweekly masterclasses on specific issues such as crunch phase management, diversity, international talent recruitment, a specialized legal hotline at negotiated rates, and peer-to-peer exchanges via LinkedIn. *As one of the club members observe: "I think its reason for being, I would say, is to break HR loneliness. We are often alone in our functions [...] to be able to exchange with peers, do an exchange of good practices, and also to feed ourselves."* This approach responds to local and national sector specificities where HR managers, 90% women, are often isolated in SMEs with limited resources.

For this aspect, it is important to mention an institutional specificity of the region that involves jointly two main public professional training support organizations (ATLAS and AFDAS) and the existence of support subsidies for this function that are unique to the region. As highlighted by *AFDAS representative "Today, in France, we are the only video game cluster to have a specific subsidy, actually, for employee training."*

7.5.2.5 Entrepreneurial Support

The cluster has more recently developed an entrepreneurial support program through the "Let's Go" incubator. Entrepreneurship support was previously done informally, via spin-off mechanisms and informal mutual aid between studio managers. The incubator formalised a program in response to a recurring sector need. The program aims to be economically accessible while guaranteeing a qualitative support. It selects 8 to 10 projects per year for a 12-month duration for €300/month. It includes 300 hours of annual masterclasses covering all entrepreneurial aspects (legal, financial, marketing, technical), individual mentoring by experienced and voluntary professionals, and sectoral immersion including studio visits and participation in major events. *One mentor involved in the incubator explains this aspect further: "Overall, I do it for two reasons. The first is because I am intimately convinced that if we don't teach people who come after us, we won't be able to progress [...] For me, it requires 15h in the year. It's really nothing."*

The program shows good efficiency with a 90% survival rate over four cohorts in a sector characterized by high entrepreneurial failure rates. Similarly, the peer learning approach allows practical expertise transfer and professional network development. The accompaniment also includes aid for public and private funding research with sophisticated arrangements combining personal contributions, honour loans, bank credits, and subsidies, requiring certain financial engineering expertise that is often underdeveloped by studios.

7.5.2.6 Innovation Support

Game Only is inserted in a network of similar regional structures that each act within a geographic perimeter coinciding with institutional regional divisions (Capital Games for the Île-de-France region, Game-In for the Nord and Hauts-de-France region...). Game Only supports diversified projects and notably professional events dedicated to the sector like Game Camp in Lille or Paris Games Week in Paris. The association also has a driving role in French regional cluster coordination, often being at the origin of inter-cluster projects.

> *"They are still often at the initiative of inter-cluster projects. We still effectively have a specificity, even if I don't know all clusters in detail, but we can see that they are very often at the origin of projects that are mounted." (Representative of a local public authority)*

This national leadership position translates into participation in national sector representation bodies and the capacity to carry large-scale collaborative projects like JYROS or Bertie Formation. The JYROS project is an illustrative case of a major-scale collaborative innovation exceeding the cluster's local framework. A national consortium, piloted by Game Only, collaborates to develop a carbon footprint tool specialized for the video game industry, responding to CNC requirements for obtaining subsidies. This project, endowed with a budget of €1.4M including €700k in subsidies from the France 2030 program, developed over 2-3 years in collaboration with Capital Games. The tool, approved by CNC and intended for European expansion via the European Media program, positions the Lyon cluster as a reference actor on environmental issues while creating an exportable standard. This innovation fits into a broader prospective approach where Game Only carries reflections on artificial intelligence's impact on production pipelines, implementation of a quality of life at work charter, and other transversal projects responding to the needs for anticipating sectoral mutations.

7.6 Cluster motivations, benefits and contributions

The success and sustainability of the Lyon video game cluster rest on a sophisticated system of motivations and benefits destined to incentivize actors with very diverse profiles and needs. It also explains why Game Only today brings together a large majority of regional studios in a sector characterized by creative individualism and economic competition. The analysis of this model reveals a logic of differentiated reciprocity where membership motivations and benefits obtained vary according to the size, maturity, and needs of actors but also their contributions to the collective activities. This structuring offers a first level of understanding and organization of the diversity of services, both formal and informal, from which cluster actors' benefit.

A variable membership model can be observed:

- Startups/VSEs are primarily motivated by individual and organizational economic issues, massively benefiting from support and structuring services that can make the difference between survival and disappearance in critical early years.
- Established SMEs seek a balance between economic, social, and institutional benefits, primarily using commercial development and networking services that allow them to break isolation while optimizing their limited resources.
- Large companies are more motivated by collective institutional issues, contributing financially more than they directly benefit, but profiting from territorial visibility and transversal projects that reinforce their employer attractiveness and strategic positioning.

This differentiated reciprocity explains the stability of the collective action model despite the various crises and transformations the cluster has experienced: each actor contributes according to their resources and benefits according to their needs, creating a self-sustaining ecosystem where individual, organizational, and collective interests mutually reinforce each other. The reliance on permanent staff alleviates also the need for direct involvement and contribution of the cluster's members in the deployment of collective activities.

7.6.1 Motivations analysis

We identify three major types of motivations that drive the collective engagement in the cluster. These motivations are not mutually exclusive but combine differently according to actors' profiles.

Type of motivation	ECONOMIC	SOCIAL	INSTITUTIONAL
Description	Search for financial advantages, cost reduction, commercial opportunities, and resource optimization. Examples include: •Mutualization of costs (international trade shows) •Access to public funding	Need for belonging, recognition, professional connections, and community support Examples include: •Breaking professional isolation •Relationship building • Know-how transmission	Search for legitimacy, political influence, sectoral recognition, and strategic positioning Examples include: •Collective representation •Influence on public policies •Territorial positioning

	"We save on transaction costs! We share the ticket. We all pay 7/8k and have access to a tool worth 70k."	*"When things go well or badly, it's good to talk with them. Listening, benevolence have been strong markers"*	*"They manage to make the French administration move"*

Table 17 – Types of motivations for collective actions

We observed certain tendencies according to the actors' profiles. Thus, economic motivations dominate among small companies seeking survival and development, while social motivations gain importance with the growing isolation of specialized SME leaders. Institutional motivations emerge mainly among established actors who seek to influence their business environment and contribute to their sector's development.

Motivations also differ by their level of impact, revealing engagement logics that range from immediate personal interest to contribution to territorial common good.

Impact level	COLLECTIVE / ECOSYSTEMIC	ORGANIZATIONAL / FIRM	INDIVIDUAL / PERSONAL
Description	Motivations are aimed at developing the entire territory and sector, going beyond individual interests	Motivations are centred on improving performance and development of the member company	Motivations linked to professional and personal fulfilment of leaders and collaborators
Associated impacts	•Territorial economic development •International attractiveness •Building sectoral identity •Collaborative innovation	•Cost and resource optimization •Commercial development •Managerial structuring •Access to skills	•Career development •Professional training •Peer recognition •Professional fulfilment
Illustrative quotes	*"We are an important contributor [...] we probably bring more than we get in benefits but for us it's also a way to contribute to developing these ecosystems"*	*"The fact of discussing with entrepreneurs who already had ten years of experience in the sector [...] it allowed us to better understand how it worked"*	*"If we don't teach people who come after us, we won't be able to progress"* *"By principle and by pleasure"* (participation motivation)

Table 18 – Impact levels of motivations

This gradation reveals a certain evolution of motivations with the actor maturation level: starting entrepreneurs tend to focus on their immediate needs both at the individual and organizational whereas more maturing companies tend to adopt a collective perspective where their contribution to the ecosystem becomes a source of satisfaction and legitimacy. But more generally, all entrepreneurs tend to be motivated by a mix of the three types of motivation discussed above.

7.6.2 Benefits & Contributions Analysis

The Game Only model propose a tiered range of benefits that correspond to different levels of member engagement and contributions. This three-level architecture creates an incentive system that encourages progressive engagement while guaranteeing an accessibility to all to a major part of the cluster's services.

	BASIC & ACCESSIBLE TO ALL	SEMI-SELECTIVE	SELECTIVE / ELITIST
Accessibility conditions	•Simple Game Only membership •No conditions •Automatic access	• Flexible eligibility criteria •Required participation commitment •Specific function or need	•Rigorous selection •Proven capabilities •Significant commitment required
Business model	•Funded by basic membership fees •Cost mutualized across all members •Creates fundamental attractiveness	•Partially self-funded •Specialized fees (e.g., HR Club €400/year) •Public-private co-financing	•Funded by "major contributors •Leverage effect of subsidies •Maintains leader engagement
Examples of services	•General institutional representation •Newsletter and sectoral monitoring •Networking events •Collective territorial brand	•International Development Plan •Specialized professional clubs (HR club...) •Bertie Formation •Sectoral tools (JYROS)	•Let's Go incubator (8-10 selected/year) •Participation in governance • Official representation •Complex financial engineering

Table 19 – Types of benefits of collective actions

This benefits and contribution's structure avoids the classic pitfall of collective organizations that struggle to simultaneously satisfy the needs of "small" and "large" players while engaging them and ensuring voluntary contributions. Basic services create universal attractiveness and justify mass membership, semi-selective services generate significant added value for those who invest more, while elitist services maintain individual engagement by offering them exclusive opportunities for influence and recognition.

The analysis of benefits reveals three major families of activities that correspond to the fundamental needs of companies: gaining legitimacy and influence (institutionalization), creating connections and accessing information (animation), and developing skills and business (learning).

7.6.2.1 Institutionalization & strategizing

This first family of benefits responds to the fundamental need for recognition and influence that characterizes a relatively young sector seeking legitimacy. It proves particularly crucial in the French context where public authorities play a major role in supporting creative industries.

Institutional Representation	It refers to the collective defence of sectoral interests with public authorities at all levels (local, national, European) Examples include: •Lobbying to maintain video game tax credit •Negotiations with CNC on aid criteria

	•Participation in public consultations *"Almost daily, my work is to sensitize all public authorities with whom we can work on issues specific to the video game industry"* (General Director of Game Only)
Visibility & International Influence	It involves building a collective territorial brand that benefits all members Examples include: •Organization of collective stands at international trade shows •Coordinated economic missions •Hosting foreign delegations *"When Game Only advertises, all company logos are present – alongside the biggest ones. At trade shows, in Germany, SF, Tokyo, and wherever Game Only sets up a France booth"*
Sectoral Tool Development	It involves collaborative innovation to create solutions that companies could not develop individually Examples include: •JYROS: carbon footprint tool (€1.4M budget) •Bertie Formation: specialized training organization •Shared digital platforms *"For example, Game Only can have a tool developed for all studios. They have rates. Upcoming CNC subsidies are conditioned on a carbon footprint [...] They released Jyros, it's very good"*

Table 20 – Institutional benefits in the video games cluster in Lyon

7.6.2.2 Animation & networking

This second group of benefits responds to the relational and informational needs of professionals in a sector characterized by intense production cycles alternating with periods of uncertainty. The isolation of specialized SME leaders makes these services particularly valuable.

Access to Sectoral Information	It consists in monitoring and shared economic intelligence to reduce information asymmetry Examples include: •Specialized sectoral newsletter •Publisher experience feedback •Pooled market analyses and sectoral benchmarks *"For example, GO can have a tool developed for all studios. They have rates. Upcoming CNC subsidies are conditioned on a carbon footprint [...] They released Jyros, it's very good"*
Talent Attraction & Recruitment	It is about facilitating skill circulation and recruitment in a tight labour market Examples include: •Active HR Club (20 regular members) •Specialized recruitment events •Profile sharing between studios and cross-recommendations between leaders •Partnerships with schools *"If only for hiring, jobs, made us work. But it's via the GO network that there can be professional, commercial discussions with people"*
Partner Search & Networking	It consists in facilitating commercial partnerships and technical collaborations Examples include: •Regular networking events •Organized matchmaking by skills •Facilitation of collaborative projects •Connection with extended ecosystem

	"Social events are moments when people with complicated schedules have a parenthesis to discuss needs. This creates a space"

Table 21 – Networking benefits in the video games cluster in Lyon

7.6.2.3 Learning & support

This third family constitutes the operational core of the cluster's added value, responding to concrete business development needs in a sector in constant technological and economic mutation.

Business development & access to markets	Support for internationalization and commercial development •International Development Plan (PDI): 50% of trade show costs reimbursed • Organized collective missions • Negotiation of preferential rates • Commercial introductions *"Transaction costs! We share the ticket. We all pay 7/8k and have access to a tool worth 70k"*
Professional & technical assistance	Company structuring and managerial skill development •Specialized professional clubs (HR, CFO, Communication) •Tailor-made Bertie training •Company structuring consulting •Thematic masterclasses •Organizational diagnostic tools *"They serve as scouts and popularisers for everything related to subsidies/state actions. Many companies are founded by students who don't know the state's language"*
Financial assistance & access to funds	Aid in research and obtaining public and private funding •Monitoring of aid schemes •Support in file preparation • Connection with funders •Complex financial engineering • Crisis intervention for unblocking situations" *One summer, I couldn't close the cash flow, I had an unpaid tax credit. In their bag of tricks, the person in charge sends someone from labour inspection. The situation is unblocked"*
Intensive entrepreneurial support	Support for business creation and development • Incubator Let's Go • Individual mentoring *“Talking to entrepreneurs who had already been in the sector for more than ten years, who had gone through these stages, gave us a better understanding of how things worked and where we needed to start”*

Table 22 – Business & learning benefits in the video games cluster in Lyon

7.7 Resources, Competencies and Financial Aspects

7.7.1 Human and Organizational Resources

7.7.1.1 Structured governance and professional team

Game Only's operational strength relies on a hybrid organizational model combining democratic governance with professional management. The association operates with a team of 8 permanent staff led by a General Manager. This team, characterized by strong feminization and recognized expertise in ecosystem facilitation, European project management, and institutional relations, serves 120 members representing more than 90% of regional studios.

The governance system based on the democratic election of a 12-member Board of Directors with conscious representativeness (company size, activity segments, gender parity), the designation of voluntary specialized thematic vice-presidencies, and quarterly strategic ensures both democratic legitimacy and operational efficiency.

7.7.1.2 Human capital and culture Inherited from cluster historical legacy

Whereas the 120 Game Only members represent remarkable diversity ranging from individual micro-studios to large international companies (Bandai Namco, Ubisoft, Arkane), including training institutions and specialized service partners, they share many common resources contributing to their cohesive collaboration. The Lyon ecosystem was built on Infogrames legacy and different waves of spin-offs thus contributing to the emergence of a common DNA and enduring relational networks. This historical evolution generated a strong collaborative culture among entrepreneurs sharing cultural codes and technical expertise. The reputation of the cluster as a recognized hub for video games development and its attractiveness for many studios and video games companies is also an asset which is consciously and progressively enhanced by the local stakeholders among both private actors and public authorities.

7.7.1.3 Structured volunteer work

Along the team of employees and staff of Game Only, the cluster mobilizes a structured network of volunteer contributors ranging from mentors for the Let's Go incubator, including experienced entrepreneurs, to the board members, or the facilitators of specific events such as HR Club meetings. These voluntary contributions are crucial for the continuous thriving of the cluster.

7.7.2 Technical and methodological competencies

Given the heterogeneity of its services and key stakeholders, Game Only was required to develop a strong expertise in financial engineering combining technical knowledge (CNC, BPI, regional aid schemes) and complex application writing skills. The internal team is also supposed to provide support to its members including the search for public and private funding combining personal contributions, honour loans, bank credits, metropolitan subsidies, and BPI loans.

The cluster possesses also an institutional which extends from local levels to European instances. The association participates in regional aid selection committees, influences support scheme evolution, and maintains direct links with ministries for effective lobbying. The cluster possesses a recognized expertise in international support, inherited from International Development Plan (IDI) management. This competency includes logistical organization of collective participations, negotiation with trade show organizers, and commercial support for companies. The privileged relationship with the region enables access to export aid schemes while mutualizing costs for members. The association has also demonstrated its capacity to carry complex transversal innovation projects such as JYROS or Bertie training.

7.7.3 Financial Resources, sustainability and economic model

Game Only operates with an annual budget of over €800,000 distributed according to a 60-40 model between public funding and private revenues. This distribution reflects a progressive diversification strategy toward financial autonomy within 10 years, responding to a sovereignty imperative facing political uncertainties.

The association combines also many public funds ranging from the regional Funding (the subsidy of Auvergne-Rhône-Alpes region) to state funding (DREETS, France 2030, CNC …) and European funding (Creative Europe, Horizons 2020).

It also mobilizes diversified private resources including scaled Membership Fees: from €100 to €7,000 according to members' revenues, representing 30-40% of total budget, and fees for paid services such as « Let's Go incubator » and « HR Club » and revenue-generating activities such as training via Bertie Formation.

The association pursues a strategy of gradual empowerment aiming for economic sustainability and complete independence from public subsidies within 10 years to "reverse the power relationship" with public funders. This approach relies on the continuous diversification of private revenue sources and the development of revenue-generating services (Bertie Formation, specialized consulting). Indeed, many structural weaknesses stem from the peculiar architecture of the financial model of Game Only. First, public funding dependency and regional structural subsidy stagnation, explicitly mentioned by regional officials, constrains permanent activity development. Annual renegotiation creates permanent uncertainty, constraining strategic planning. The current sectoral crisis and its impact weigh also on the prosperity of the cluster. Several studio closures in 2024-2025 directly impact the member base and self-financing resources. This erosion also affects service consumption as struggling studios reduce training and consulting investments.

7.8 Collaborative Networks

The Lyon video game exhibits a sophisticated web of inter-organizational relationships that connect it to institutional partners, peer networks, and collaborative ecosystems.

7.8.1 An intricate web of meta-organizational links

The institution network architecture in which the Lyon cluster is embedded helps the cluster to leverage France's institutional complexity while building coordination mechanisms that extend beyond its regional boundaries and help the inter-cluster cooperation.

The cluster's relationship with public institutions reflects the expertise and understanding of French decentralization specificities, where multiple levels of government maintain distinct competencies and funding mechanisms. Game Only inherited an institutional expertise helping it navigate this complexity and developing structured partnerships across institutional layers. At the national level, the cluster is involved in a web of meta-organizational relationships which supports national coordination among French video game clusters and enabled the development of distributed innovation collaborative projects such as JYROS, a €1.4 million carbon footprint tool created in collaboration with Paris cluster Capital Games. This project combined Lyon's operational expertise with Paris's market access to create solutions that no single cluster could develop alone. The creation of inter-cluster Bertie Formation and development of sectoral standards exportable to other regions further illustrate the potential of this collaborative model.

Beyond institutional relationships, the cluster has cultivated several partnerships with academic and service providers that create a supportive ecosystem for member companies. Historical academic partners like École Émile Cohl, which has provided animation and computer graphics expertise since the 1980s, demonstrate the long-term nature of these relationships. The IUT du Puy-en-Velay offers a particularly interesting example of responsive partnership, adapting its motion capture equipment based on direct feedback from studios about industry needs.

7.8.2 Different forms of proximity

The cluster's internal cooperation networks reveal sophisticated mechanisms that transcend simple business relationships. The relational heritage from Infogrames continues to provide the foundation for much of this collaboration. As Laurent Paret explains, *"We were really a big group of friends. That's how we can put it at the base, even though we all had our companies, we were all competitors on things, it was really a big group of friends."*

This foundation of personal relationships creates lasting relational capital that enables forms of cooperation impossible in purely transactional environments. The shared technical culture and mutual trust developed during the Infogrames years, and the subsequent collaborations within Lyon Games and Imaginove facilitates sharing of sensitive information about market conditions, client reliability, and business challenges that helps all members make better decisions.

The absence of direct competition provides another crucial enabler of cooperation. Game Only president captures this fundamental characteristic: *"It's true that one of the very strong advantages we have in gaming is that there's no direct competition. Since we're dealing with cultural products with a market of almost infinite size, everyone is directly international."* This reality enhances the levels of transparency and allows members to share strategies, difficulties, and best practices openly without fear of strengthening competitors.

7.8.3 Sophisticated business cooperation

The cluster has developed multi-scale collaborative subcontracting relationships that illustrate the maturity of inter-studio relationships. Local collaborations like Artefact working for Arkane and Eden Games developing proximity synergies demonstrate how geographic proximity enables flexible project partnerships. National collaborations such as the Artefact-Kyloton partnership create structured interregional relationships that leverage complementary competencies across different markets.

International outsourcing arrangements reveal how the cluster integrates with global value chains while maintaining local coordination. As one studio director explains: *"We outsource part of our graphic work to Vietnam or China [...] when you need to align 15-20 people who will do the same things, specialized for example in vehicle or motorcycle modelling, there's almost nothing left that exists in France."* This pragmatic approach to international competition demonstrates how clusters can adapt to global realities while preserving local cooperation.

Co-publishing cooperation represents also the most advanced form of collaborative partnership. Angel Corp's experience with the Instant Sport range—involving equitable sharing of investments and revenues that generated approximately 1 million units sold and €2.5 million in royalties—demonstrates the economic viability of sophisticated collaborative approaches that go far beyond simple subcontracting.

7.8.4 Creation of a fluid market

The cluster has successfully created a remarkably fluid local labor market that benefits all participants. Cross-recommendations between leaders facilitate recruitment and mobility, while deep mutual knowledge of available profiles and skills optimizes talent allocation across the ecosystem. Importantly, relationships are maintained even after employees change companies, creating a durable professional network that transcends individual employment relationships.

This talent fluidity is facilitated by the geographic proximity and human scale of the cluster, which allows personal knowledge of actors and their capabilities. The result is a labour market that operates more like an extended professional family than a competitive marketplace, reducing recruitment costs and improving job matching for both employers and employees.

7.8.5 Recognizing the limitations

Despite these successes, the cluster's cooperation networks face important limitations. A representative of the DRAC offers a candid assessment: *"I'm not sure there are that many links between studios. There are necessarily complicities or common work with subcontracting, things like that between studios. I think outside the cluster, there aren't really those links."*

This observation reveals a critical insight: cooperation remains essentially structured around Game Only services rather than direct collaborative projects between member companies. While the cluster facilitates networking and provides platforms for interaction, it has been less successful in generating spontaneous horizontal cooperation that operates independently of the formal cluster structure. This limitation suggests potential for future development while acknowledging the inherent challenges of creating sustained collaboration among independent businesses.

7.9 Cluster Governance Structure and Mechanisms

7.9.1. « Game Only » governance architecture

Game Only operates according to an associative model that reconciles democratic requirements and operational efficiency through several interconnected mechanisms.

Board of directors	It is composed of 12 members elected for three years with representativeness based on company size (VSEs, SMEs, subsidiaries of large groups) and activity segments (mobile, PC, console, emerging technologies). Strict gender parity (6/6) ensures balance of perspectives
Executive bureau	It involves a clear functional distribution where the president ensures external representation and strategic facilitation, the treasurer (professional financial director) supervises the financial aspects, and the secretary coordinates administrative aspects

Thematic vice-presidencies	They constitute a second layer of thematic specialization based on a voluntary assignment system by area of expertise (export, HR, training, ecological transition), and ensuring the optimization of volunteer engagement and specialization of responsibilities
General Assembly	This annual key moment in the association life brings together 120 members representing virtually all eligible regional studios. With a statutory quorum set at 50% but a target of 70% participation, this body ensures democratic legitimacy for strategic orientations, board elections, and accounts approval

Table 23 – Governance architecture of the video games cluster in Lyon

The governance structure ensures also an organized Democratic Rotation with an electoral renewal every 3 years and an active search for new representative candidates to prevent power monopolization and ensure idea renewal.

Game Only follows also a strict membership criteria and rules where only companies generating more than 70% of their revenue from video games can vote and be elected, thus excluding schools and service providers. This rule preserves pure sectoral governance centred on developers' real issues, following the main logic and reasons that motivated the dissolution of Imaginove and the creation of Game Only. As Game Only president explains: *"The idea was really to be governed by studios for studios. Companies are members of the cluster, not individuals"*. Regarding the public funders, these rules set also some boundaries and avoid controversies. Public funders participate in board meetings without voting rights, creating appreciated transparency but sometimes discomfort in freely discussing difficulties.

The reliance on an «external» permanent team of 8 employees since 2018 constitutes a key success factor, ensures a certain independence for the cluster and prevents any opportunistic behaviour or risk of misappropriation of some benefits of collaboration. As a representative of the DREETS testifies *"I think they were super good at recruitment. I think if you know their general director a bit, well, they recruited the world champion. She's a really dynamic person."*

7.2. Coordination Mechanisms between the formal and informal

The governance system of the cluster relies also on many tools and mechanisms of coordination, control and interest alignment both formal and informal.

Formal coordination revolves around structuring key moments:

- Annual General Assemblies for democratic validation
- Quarterly Board Meetings: intensive half-day sessions addressing twenty strategic subjects
- Structured Programs with dedicated management teams such as Let's Go for incubation, training programs

The cluster relies also on an informal coordination through different mechanisms and spaces:

- Digital spaces and notably official Game Only Slack and Discord and specialized LinkedIn groups,
- Networking events and regular after-works and professional evenings creating opportunities for spontaneous collaborations

- Inter-cluster coordination through a national Discord bringing together 8 French regional associations + SNJV, organized in specialized thematic channels

Regarding the inter-cluster coordination, the Discord system enables expertise exchange and project mutualization without creating constraining legal structures.

This digital coordination mechanism mitigates the geographically dispersed distribution of these clusters and helps them collaborate effectively. Rather than creating bureaucratic federal structures that might limit autonomy, the Discord system enables real-time information sharing, joint project development, and collective problem-solving while preserving each cluster's independence. The system has proven particularly effective for developing sectoral standards and sharing best practices across regions.

Within the cluster social regulation is also an important mechanism for mobilizing reputation and norms of reciprocity and trust. The tightly knit networks underlying the professional environment where everyone knows everyone, individual reputation is mobilized as a cue for encouraging cooperation and sanctioning non-cooperative behaviors. These networks support also informal peer mediation where of experienced and respected entrepreneurs intervene to defuse tensions. In some cases, Game Only serves as a neutral framework to facilitate dialogue in case of conflicts.

The Lyon cluster has developed an original hybrid governance model that successfully combines:

- Associative democracy preserving each studio's entrepreneurial autonomy
- Institutional professionalization enabling large-scale regional and national actions
- Solid informal networks based on personal trust and social proximity rooted in Infogrames heritage
- Efficient multi-level coordination articulating local, national, and European issues through innovative tools like the national Discord system

The model creates an original form of territorial coordination that reconciles entrepreneurial autonomy and effective collective action, though it faces ongoing challenges in managing the tension between transparency requirements and operational autonomy, particularly regarding public funder involvement in governance processes.

8 THE FUNDÃO CLUSTER

Fundão, a municipality located in the Castelo Branco District of central Portugal, has long been known for its rich agricultural landscape, particularly its cherry cultivation. This rural municipality has historically relied on agriculture, with the fertile land of the Beiras and Serra da Estrela sub-region (NUTS III) supporting fruit production for centuries. Despite this agricultural base, Fundão has faced significant demographic and economic challenges. According to the 2021 census, the population stood at 26,503[4], reflecting a gradual decline from 31,482 in 2001, which mirrors a broader trend of rural depopulation in Portugal. The average age of the population is high, with 32.5%[5] of residents being over the age of 65 as of 2023. This ageing demographic has posed challenges in terms of workforce sustainability and economic vibrancy, making the need for economic diversification critical.

Faced with these challenges, Fundão took proactive steps to transition from an agrarian economy to a knowledge-based and technology-driven economy. This shift began with the **Fundão Innovation Plan,** launched in 2012, which sought to reposition the municipality as a hub for digital innovation and creative industries. The Fundão Innovation Plan aimed to attract high-tech companies and foster entrepreneurship, particularly in sectors such as software development, IT, and digital media. The result has been a significant transformation of the local economy, reducing the region's reliance on agriculture and creating a more diverse economic base.

The Innovation Plan was a central element in Fundão's strategy and vision. From the creation of an incubator for startups to providing access to essential resources for game development, digital media innovation, and applied research, the Municipality of Fundão has implemented several actions to reinforce the technological development of the region and fight the demographic and economic challenges. In addition, Fundão Municipality also fostered over the years, collaboration between local businesses and international stakeholders, enhancing Fundão's global visibility. With the increasing number of startups and technological companies establishing a presence in Fundão, the municipality saw a resurgence of business activity and employment opportunities, particularly for youth and young professionals in digital fields.

After the COVID-19 pandemic, one of the most strategic initiatives that Fundão undertook was to shift its focus to the video game industry. The global gaming market, valued at €38 million in Portugal in 2022[6], has seen exponential growth, and Fundão has capitalized on this trend by developing its own video game cluster. By aligning itself with the national and global demand for digital content, Fundão has positioned itself as a key player in Portugal's emerging gaming industry. The municipality's decision to focus on video games aligns with national strategies outlined in Portugal's Digital Portugal 2030 initiative[7], which seeks to enhance Portugal's digital innovation and make it a competitive player in Europe's digital economy.

[4] https://www.citypopulation.de/en/portugal/castelobranco/admin/16A0504__fund%C3%A3o/

[5] https://urbact.eu/sites/default/files/2022-10/1.%20Fund%C3%A3o_Final%20IAP.pdf

[6] https://www.portugalglobal.pt/media/ss0gzfz3/pg177.pdf

[7] https://portugal2030.pt/wp-content/uploads/sites/3/2023/05/sfc2021-PRG-2021PT16FFPR009-1.2_PITD.pdf

This transition to a technology-driven economy is not limited to video games alone. Fundão has also experienced growth in its tertiary sector, with significant employment in services such as education, healthcare, and tourism. According to recent data, the tertiary sector employs over 3,200 individuals in Fundão as of 2022. The tourism sector has also flourished, with an increasing number of tourists visiting the region, particularly due to its historical significance and natural beauty. In 2023, the region's accommodation capacity was 829, and the total number of nights spent in tourist accommodations reached 90,803, signalling Fundão's growing role in Portugal's tourism economy. In fact, the municipality's exports reached €45.5 million in 2023[8], with the technological sector contributing to this increasing international visibility.

In addition to digital innovation, Fundão's population growth in recent years, although modest, represents a shift in local economic activity. From 2022 to 2023, the population increased by 1.3%, reaching 26,981 residents. While the population still faces ageing and migration challenges, the municipality's investments in digital industries and education are helping to counterbalance these trends. The partnership with Universidade da Beira Interior (UBI) in Covilhã has been crucial in developing a workforce equipped for the technology sector, providing specialized training in game design, software engineering, and digital arts. These educational initiatives have helped supply the region with a pool of talent necessary to sustain the digital transformation.

Moreover, Fundão's involvement in European initiatives, such as the **GAME-ER** project, has significantly enhanced its international profile. By collaborating with other European regions focused on technology and video game development, Fundão has shared best practices, attracted international investment, and integrated into a broader European network of creative industries. This cross-border cooperation strengthens Fundão's competitiveness within the European digital economy and contributes to the municipality's growing role as a strategic partner in international innovation projects.

This chapter presents the results of the study conducted within the **GAME-ER** project which aimed at understanding the emergence, development, and sustainability of the video game cluster in Fundão. The findings are synthesised in an interpretive framework aimed at generating actionable insights for researchers, policymakers, and practitioners concerned with regional innovation, cluster development and the video gaming sector.

[8] https://www.gee.gov.pt/pt/docs/doc-o-gee-2/estatisticas-regionais/distritos-concelhos/castelo-branco/fundao/3055-fundao/file

Figure 18 – Portugal map: localization of Fundão

8.1 Methodology, Data Collection and Analysis

The methodology of this work is based on the study and analysis of primary sources from the Fundão cluster. The direct sources are composed of a series of semi-structured qualitative interviews with the main actors belonging to the Fundão innovation and video game ecosystem, complemented by interviews with some of the most relevant national actors in direct relation to the Fundão ecosystem. A total of 28 key stakeholders were interviewed (between December 2024 and March 2025), including game developers, tech entrepreneurs, local government, educators, video game academics, and industry experts. The interviews were conducted in Portuguese and varied in length (on average, 60 minutes). The sample was constructed as a non-probability sample, following the *snowball* method, which is built based on referrals from other participants. Participants were informed of the study's aims and provided informed consent. Interviews were transcribed[9] and systematically coded into a thematic hierarchical scheme[10], following an inductive thematic analysis approach[11].

[9] Interviews were conducted in MS Teams and transcribed using this platform's transcription functionality. A thorough review was made to identify and review transcription errors.
[10] The coding was assisted with ChatGPT (OpenAI) and it comprised 4 steps: (i) generation of codes for each interview individually; (ii) harmonisation and merging of similar codes identified in previous step and themes identification; (iii) harmonisation of main themes, merging themes with similar meaning (resulting in the identification of 18 Main Themes); (iv) validation of previous steps (by re-checking codes identified for each Main Theme) and interpretation of results.
[11] Braun, Virginia, and Victoria Clarke. "Using Thematic Analysis in Psychology." *Qualitative Research in Psychology* 3, no. 2 (2006): 77–101. https://doi.org/10.1191/1478088706qp063oa

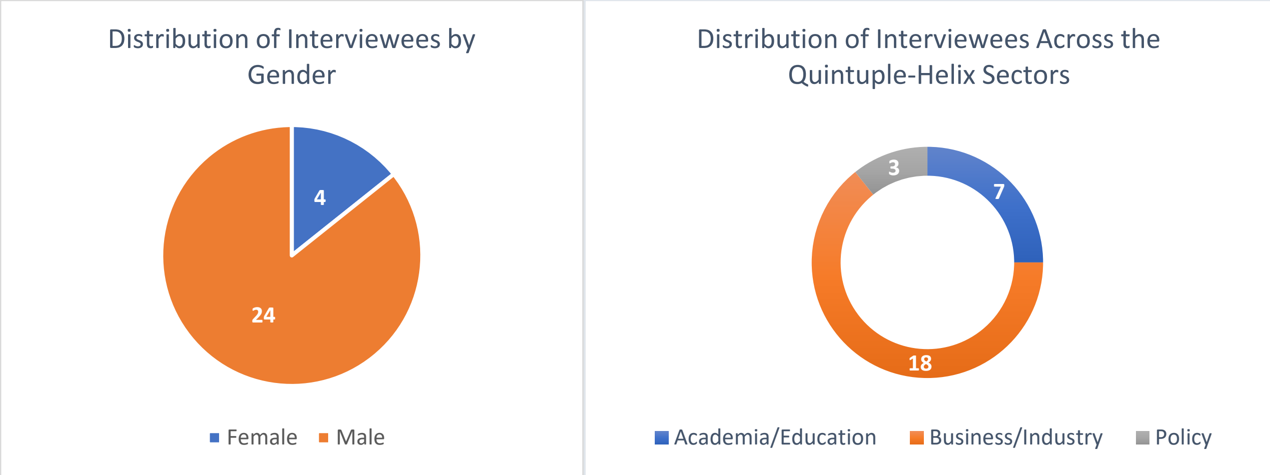

Figure 19 – Characterisation of Interviewees

At the end, interviewees informed our study on 18 main themes, providing insights on the foundational basis of the Fundão cluster, its strategic decisions, operational process and the sociocultural factors, supporting our understanding of how Fundão's cluster has evolved and sharing hints for others aiming to adopt or replicate Fundão's decisions.

8.1.1 Thematic Analysis: Foundational, Environmental, Strategic and Operational Themes Framework

The development of Fundão's gaming cluster is driven by, what we named, foundational and contextual factors. The **foundational themes** highlight the essential elements needed for the cluster's emergence and success, such as talent development, community building, and the creation of a strong governance framework. These elements form the core of the cluster's functionality. Meanwhile, the **contextual themes** focus on the broader societal and cultural factors that influence its growth, including public acceptance and cultural legitimacy. Together, these themes provide the necessary groundwork and contextual support for the cluster's emergence and sustainability. **Figures 20, 21 and 22** display the thematic framework presenting the categories most frequently addressed by interviewees.

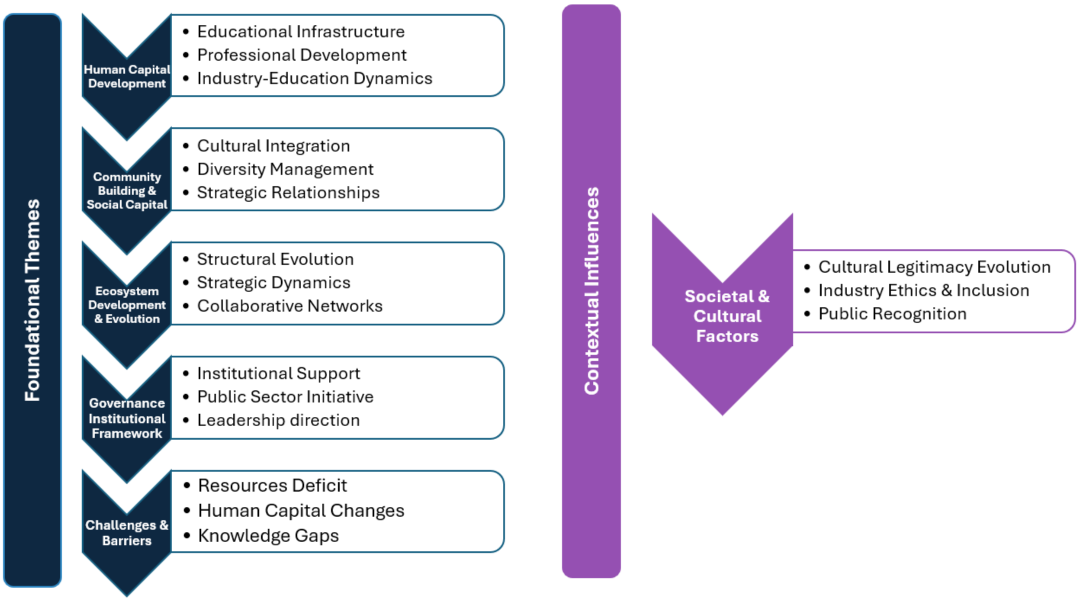

Figure 20 – Fundão Cluster Foundational and Environmental Themes

The **strategic themes** focus on the deliberate choices and decisions that shape the development and positioning of Fundão's gaming cluster within the broader market and regional landscape. These themes highlight key factors such as the establishment of collaborative networks, strategic investments in infrastructure, and the creation of a policy and regulatory framework that supports industry growth. They also emphasize the importance of positioning Fundão as a competitive player in the gaming industry, considering market dynamics, regional development, and industry-specific strategies. These themes are essential in defining how Fundão competes on the national and international stage, ensuring its long-term success and sustainability.

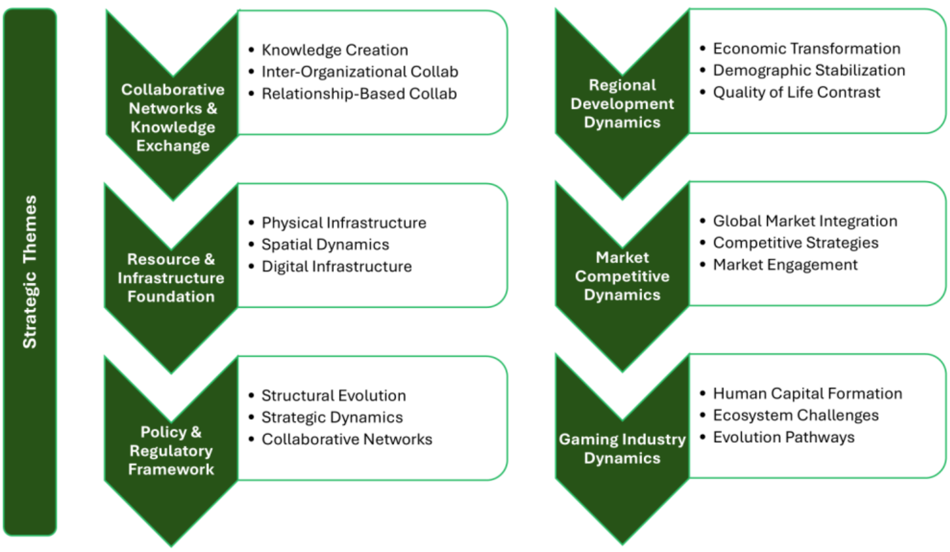

Figure 21 – Fundão Cluster Strategic Themes

The **operational themes** focus on the day-to-day implementation and management of Fundão's gaming cluster development strategies. These themes emphasize how strategic decisions are translated into actionable outcomes, from fostering entrepreneurship and business development to nurturing innovation processes within the ecosystem. The operational themes also highlight the importance of managing spatial and relational dynamics, ensuring effective coordination within the cluster, and maintaining a conducive environment for growth. These practical aspects are crucial for the smooth functioning and ongoing evolution of the gaming cluster.

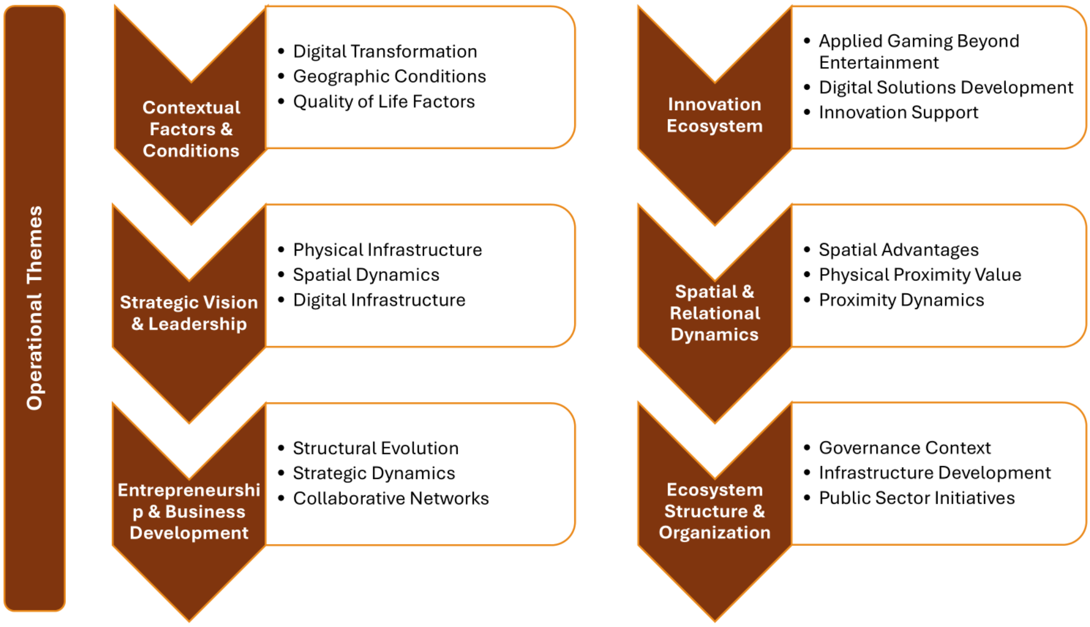

Figure 22 – Fundão Cluster Operational Themes

In the next sections, we present the key findings from our study on Fundão's cluster, with all interviewees referenced by pseudonym, accompanied by illustrative quotes.

8.1.2 A National Context: The Portuguese Video Game Industry

The development of Fundão's gaming cluster must be understood within the context of Portugal's evolving video game industry. Until the 2000s, Portugal's game development scene was nascent and largely "under the radar" – comprised of small groups of hobbyists without a formal industry structure. Early roots can be traced to the 1980s and 90s, when accessible microcomputers like the ZX Spectrum sparked a wave of enthusiast programming[12]. As one veteran developer recalled: *"Video games started appearing in Portugal in the 80s and 90s… at this stage, it could not be called an industry, as it was just small groups of enthusiasts and amateurs creating their own games."* (Interviewee 18, Female, National industry leader). A distinct multi-phase trajectory followed. Through the 2000s, a few indie studios formed, and Portuguese developers began to gain experience, but the sector remained fragmented and small-scale. An interviewee noted that even up to about 2010, *"the sector was very discreet" (Interviewee 24, Male, International Trade Advisor)*, lacking visibility and heft.

The 2010s, however, brought transformational catalysts for growth**.** After 2017, Portugal's video game industry entered a rapid growth phase in both enterprise activity and revenue. The turnover

[12] Zagalo, N. (2013). Videojogos em Portugal (Videogames in Portugal). Lisbon: FCA.

generated by video game companies in Portugal has increased from 5.4M€ in 2018 to over 38M€ in 2022, representing an average annual growth of 65.2%. During this period, the number of companies dedicated to this industry increased from 36 to 114 and the number of workers from 91 to over 500 (Figure 23)[13]. These numbers reflect the perceived momentum in the sector. The expanding market has motivated the establishment of bigger companies (in 2021, the ecosystem saw the establishment of the first company with more than 50 workers; in 2022, it was counted 3 of these companies) and attracted foreign investment: several multinational studios set up Portuguese branches in the late 2010s and early 2020s. Notably, Miniclip established a Lisbon studio (now one of the company's largest globally, with 320+ employees), Saber Interactive opened a Porto office (employing ~96 staff by 2021), and UK-based publishers Marmalade and Kwalee[14]. These moves signaled international confidence in Portugal as a talent base for game development.

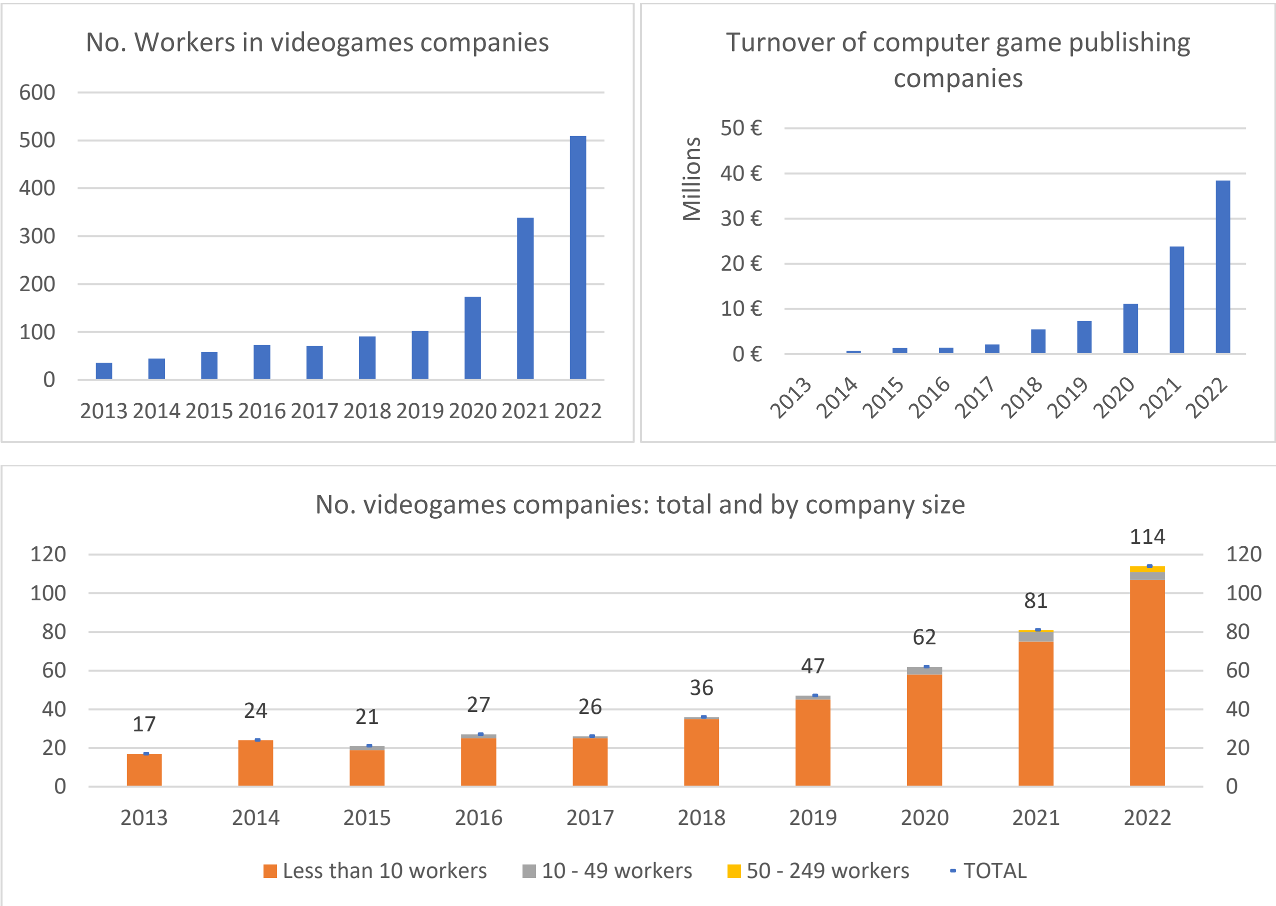

Figure 23 – Portuguese Gaming Industry Characterisation

Source: Instituto Nacional de Estatística - Estatísticas da Cultura (Cultural Statistics): 2013 to 2022. *https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_main*

For this growth, it has contributed the existing talent pipeline for game development in Portugal, which has significantly expanded. As of 2022, there were 32 higher education courses in video game development and multimedia, with approximately 7,000 students enrolled in related fields[15] – a

[13] https://www.portugalglobal.pt/media/kbqa4hxc/pg177_eng.pdf
[14] https://www.portugalglobal.pt/media/ztlmymv3/digital-industry-report.pdf
[15] https://www.portugalglobal.pt/media/ztlmymv3/digital-industry-report.pdf

substantial talent pool for a country of Portugal's size. Universities and polytechnics (e.g., the University of Beira Interior in Covilhã, Lusófona University in Lisbon, and others) established specialized programs in game design, digital arts, and computer science with gaming tracks during the 2010s.

Throughout the 2010s, Portugal also saw the growth of a game development community infrastructure. Industry associations and events were established to connect developers and promote the sector. In 2009, it was established the Portuguese Society for Videogames' Science (Sociedade Portuguesa de Ciências dos Videojogos – SPCV)[16], and, in 2013, the Association of Video Game Production and Distribution Companies (Associação de Empresas Produtoras e Distribuidoras de Videojogos – AEPDV)[17] was formed with the mission to represent companies that produce and distribute video games for consoles, computers, mobile and the Internet with operations in Portuguese territory. In 2021, a group of industry players formed the Portuguese Game Developers Association (Associação de Produtores de Videojogos Portugueses – APVP)[18] to give a collective voice and support network for studios, having joined the European Games Developer Federation[19], signalling Portugal's integration into broader industry networks.

Major events like Lisboa Games Week[20] (launched in 2014), MOCHE Game Dev Camp, and regional gaming festivals (e.g., in Coimbra and Porto) offered venues for Portuguese developers to showcase projects, share knowledge, and meet investors. These events also helped shift perceptions: whereas a decade prior gaming had low public recognition, by the late 2010s gaming gained mainstream attention as a creative industry. An industry veteran stated that *"today, it is already viable to make video games in Portugal sustainably, not just as a student project or fantasy"* (Interviewee 17, Male, National industry leader), reflecting an increasing maturity of the sector's mindset. Confirming this, government and institutional recognition of the game industry grew. By 2022, for the first time, Portugal included game development in its EU-funded Recovery and Resilience Plan (PRR): a consortium project called "eGamesLab[21]" was launched, bringing together companies and universities to spur R&D in gaming. International visibility also increased – an interviewee cited that *"in 2023, for the first time, we had a pavilion at international fairs such as Gamescom"*, showcasing about 17 Portuguese studios at one of the world's biggest game expos (Interviewee 20, Male, National industry leader).

In summary, by the early 2020s Portugal's gaming industry had evolved from an informal hobbyist scene into a growing sector with dozens of companies, formal educational pathways, and supportive institutions. It remained a relatively small industry in global terms, with continuing constraints in investment, scale and a recognized gap in experienced talent and managerial expertise. Nevertheless, its growth rate and emerging successes positioned it as a promising new cluster in the Portuguese tech landscape. This national context provided both opportunities and imperatives for

[16] https://spcvideojogos.pt/
[17] https://aepdv.pt/
[18] https://apvp.pt/
[19] https://www.egdf.eu/
[20] https://lisboagamesweek.pt/
[21] https://egameslab.pt/

Fundão's initiative. The availability of a young, skilled talent pool, the potential to attract satellite offices of larger studios, and national initiatives promoting the gaming industry, all contributed to creating a favourable environment for the development of a regional gaming cluster. However, the dominance of Lisbon and Porto as hubs for most gaming companies posed a significant challenge—Fundão needed to highlight its unique advantages to attract both companies and talent from these coastal urban centres. The next sections explore how Fundão's local conditions, along with its leadership, interacted with these broader trends to drive the creation of the gaming cluster.

8.2 Cluster Emergence & Genesis

Fundão's video game cluster was not a spontaneous development; rather, it emerged as a result of strategic planning and the cumulative efforts made over the past decade. Like many interior Portuguese regions, Fundão municipality faced typical challenges: a reliance on agriculture and textiles, a high rate of outward migration among educated youth, and a declining population.

Figure 24 – Fundão Region Characterisation

Source: https://urbact.eu/sites/default/files/2022-10/1.%20Fund%C3%A3o_Final%20IAP.pdf

Since 2012, under the leadership of Mayor Paulo Fernandes, the city council has implemented an innovation strategy, with technology and creative industries identified as key drivers for economic diversification. This section delves into the origins of the cluster, examining the region's existing local assets, historical context, the key actors involved in its initiation, and the early collective actions that laid the foundation for the gaming ecosystem. It also explores how the alignment of policy vision and community-driven initiatives cultivated the growth of this emerging sector.

8.2.1 Local Industry Origins & Historical Legacy

Although Fundão historically lacked a video game industry, the region possessed several assets that would later support the cluster's development. A growing ICT talent base was being nurtured through nearby educational institutions and the early formation of a local tech ecosystem. Notably, the University of Beira Interior (UBI) in Covilhã, about 20 km from Fundão, has strong programs in computer science and multimedia. By 2012, UBI had "*launched the first university course in the field of video games", "an idea that had been contemplated by Professor Abel Gomes for a long time*". (Interviewee 15, Male, Academic expert). This program, combining game design and development, produced a pool of skilled game developers "*a factory of game developers"*, though it did not directly produce games themselves. Despite this educational groundwork, the challenge was that most graduates historically migrated elsewhere for job opportunities *"the interior's biggest 'industry'…is the human capital we export. We train students here, but they leave"* (Interviewee 15, Male, Academic expert). Thus, a key motivation for the cluster's development was the desire to retain this talent and prevent it from leaving for other regions.

In parallel, Fundão's **Innovation Plan**, launched in 2012 by the Fundão Municipality, aimed, among other goals, to create infrastructural and competitive conditions for the settlement of technological companies[22] in the area. This proactive strategy led to significant investments in digital infrastructure, enhanced broadband connectivity, and professional retraining programs for the local workforce. A "Living Lab" for technology—the Cova da Beira Living Lab[23]—was also established as part of the plan. By the mid-2010s, Fundão had positioned itself as an "innovation-friendly city," with co-working spaces, a supportive local government, and an emerging pool of tech talent, setting the stage for the emergence of the gaming cluster.

8.2.2 Collective Actions: Initiating actors &First Interactions

The emergence of Fundão's video game cluster was driven by the convergence of diverse actors: visionary leadership, supportive institutions, strategic networks, anchor companies, diaspora connections, and community builders. Together, these forces created the initial momentum that transformed Fundão from a depopulating interior region into a rising video game cluster with national and international recognition.

Central to the cluster's genesis was the visionary leadership of Fundão's Mayor, Paulo Fernandes, and his team (including Tony Barreiros and Ricardo Gonçalves). Under Mayor Fernandes' leadership, which began in 2012, the municipality launched the **Fundão Innovation Plan**, focusing more on attracting talented individuals than simply enticing companies**.** As Mayor Fernandes explained, the municipality adopted a different approach from traditional strategies of luring firms with land or tax breaks; instead, Fundão prioritized drawing skilled professionals, entrepreneurs, and young graduates by offering an appealing living environment and robust support for project initiation. In parallel, the municipality's leadership began "aggressively selling" the city to potential investors and cultivating strategic partnerships. As Mayor Fernandes put it, he spent years traveling with "suitcase in hand" to promote Fundão's advantages to companies. His strategic vision was to leverage Fundão's high quality of life and lower costs to attract tech companies that typically gravitate toward large urban centres. One interviewee captured this political drive: *"Politically speaking, it is quite clear the strategy of the current executive over the past years to attract companies to Fundão,*

[22] https://www.interregeurope.eu/sites/default/files/inline/file_1545388692.pdf
[23] https://beira.pt/portal/noticias/sociedade/living-lab-da-cova-da-beira-premiado/
https://www.youtube.com/watch?v=UirpgXFdb6Y

especially tech companies" (Interviewee 9, Male, E-Sports expert contributor). This approach underscores the municipal government's intense focus from 2012 to 2021 on attracting tech companies as a means to reverse population decline and create jobs.

The **University of Beira Interior (UBI)** also played a critical role in the cluster's development, being "*involved in every key moment that has taken place in the region*" (Interviewee 14, Male, Lisbon-based tech professional). With excellent professors in gaming and significant academic resources dedicated to the field, UBI not only provided an academic foundation but also contributed to the talent pipeline that fuelled the sector's growth. The Institute of Employment and Vocational Training (IEFP), particularly through the Employment Service of Covilhã, also provided essential support in building the ecosystem, offering vocational training and aligning local workforce development with the emerging needs of the tech and gaming industries.

Another defining moment in the emergence of Fundão's ecosystem was the creation of the Living Lab Cova da Beira, "*in which we brought together an absolutely informal consortium, a group of about 30 local, national, and regional entities that made themselves available to work together and help the municipality in this goal of developing a new economic development strategy capable of fostering entrepreneurship, new business ideas, employment, investment, and the mobility and settlement of people in Fundão.*" (Interviewee 23, Male, Local Government Official). Moreover, the development of organic networks proved to be essential for the cluster's growth. Fundão's municipal team actively connected with individuals involved in the gaming world—such as game developers and industry curators—to learn from their experiences, gain their support for the strategy's implementation, and intensify Fundão's attractiveness. These networks leveraged the video game industry's global connectivity, where, as one interviewee noted, "*Even if people don't know each other directly, they know someone in common*" (Interviewee 24, Male, International Trade Advisor). In addition, the Portuguese diaspora in the global gaming industry played a critical role in initiating these networks. Talented Portuguese professionals working abroad helped to create local connections and solidify Portugal's presence in the international gaming sector.

The arrival of major technology companies further strengthened these networks and attracted more talent to Fundão. **A significant milestone occurred in 2014**, when Altran (now part of Capgemini Engineering[24]), a global IT consulting firm, chose Fundão as the location for a new delivery centre. "*I believe a key milestone was the arrival of Altran. When Altran established itself in Fundão, everything changed. It brought a large group of professionals and mobilized the city,"* recounted an early participant (Interviewee 6, Male, Fundão-based Tech professional). Altran's decision to open operations in Fundão marked a turning point, proving that a multinational could succeed in a rural area. This success built credibility for Fundão, paving the way for further tech investments. Other companies, such as Logicalis[25] (UK-based IT services) and Readiness IT[26], followed suit, and by 2018, Fundão had attracted approximately 600 professionals in the IT sector. This influx was so pronounced that it resulted in a housing shortage, a concrete sign of the growing demand in the

[24] https://www.capgemini.com/
[25] https://www.logicalis.com/
[26] https://readinessit.com/

city[27]. The Fundão Innovation Plan and Mayor Fernandes' leadership thus set the foundation for a broader tech cluster, within which the gaming sector would emerge as a specialized focus.

The initial phase of the Fundão cluster was also characterized by informal, enthusiast-driven community-building activities focused on technology and gaming. Events, meetups, hackathons, training academies, and associations—such as the E-Games Association of Fundão, which reached 3,000 members online—played a pivotal role in cultivating social capital and trust among stakeholders. These collective actions were seen as fundamental to the cluster's formation. As one organizer shared, "*We didn't create communities from scratch; we activated existing communities by giving them a platform*" (Interviewee 9, Male, E-Sports expert contributor).

In essence, the initial phase of the cluster's development (2012–2017) can be characterized as the intersection of top-down leadership and bottom-up community enthusiasm: the strong municipal leadership and strategic investments aligned with grassroots efforts, transforming Fundão's narrative from a declining rural town to an emerging tech hub with a focus on gaming. By 2018, the groundwork for a video game cluster was firmly in place. Fundão had cultivated an *"exceptional quality of welcome,"* as one interviewee noted, adding that "*one of Fundão's greatest strengths was recognizing the importance of diversity early on and understanding how crucial it would be in today's world. This has made a huge difference and contributed to the quality we see today. It is as if, eight or ten years ago, Fundão had already anticipated what would be essential in the present. They were able to foresee the future and invested in it strategically*. (Interviewee 6, Male, Fundão-based Tech professional.). This forward-thinking approach, combined with a growing and culturally diverse tech community and early success stories, created the ideal conditions for the cluster's acceleration and formalization.

The next sections will explore how these foundational elements laid the groundwork for the cluster's ongoing development and current features.

8.3 Local industry features and components

8.3.1 Perimeter

The Fundão video game cluster is primarily located within the municipality of Fundão, yet it maintains strong connections to the wider Beira Interior region, which includes neighbouring Covilhã and Castelo Branco, as well as transnational links, especially with Brazil.

Geographically, the cluster's core is centred in Fundão itself—specifically in co-working and innovation spaces located in the town centre, where game studios and tech companies co-locate. As one local government official explained, "*We built an ecosystem of proximity. We call it the '6 minutes and 40 seconds city'—not the 15-minute city, but an even closer concept, with the conversion and rationalization of buildings*" (Interviewee 13, Male, Local government official). This proximity fosters a highly concentrated environment, with many interviewees highlighting the city's compact nature: "*Fundão has that advantage because it's a small city – it's easier to put collaboration between different places in motion*" (Interviewee 1, Male, Academic expert). Most

[27] https://expresso.pt/economia/2018-08-05-Fundao-atraiu-empresas-e-pessoas-agora-faltam-casas

members of the cluster can easily walk to each other's offices or meet at the same *cafés*, a feature emphasized and promoted in the Innovation Plan.

While the cluster is primarily branded as focusing on video games, it spans a variety of digital industries. Companies in Fundão's ecosystem include game development studios, gamification and VR/AR solution providers, IT outsourcing companies working on game-related projects, and educational institutions. For clarity, stakeholders often refer to **Fundão's "technological cluster"** of which the gaming cluster is a specialized subset focused on entertainment software and creative content.

8.3.2 Demography of companies and employees

The company base within Fundão's gaming cluster is primarily made up of micro and small enterprises. According to interview data and municipal records, most of these firms employ fewer than 10 people. As of 2024, Fundão has five companies[28] directly involved in the gaming industry, including video game studios and developers, along with more than seven [29] related technology and interactive digital media companies, either as headquarters or satellite offices. These businesses include small indie studios (5–10 employees), a few medium-sized studios (20–50 employees), often led by foreign founders, and tech firms expanding into game development.

As previously noted, the cluster's boundaries are fluid. Not all participants are dedicated game studios; some are diversified tech companies contributing talent and resources to game projects. Most of the gaming firms in the cluster focus on game development, particularly in areas such as coding, art, and design, rather than publishing or distribution. Their work typically involves producing games for PC, mobile, and VR platforms.

On the human capital front, the cluster consists of a diverse mix of local youth, returnees, and migrants**.** A key demographic characteristic is the student and recent graduate pipeline, which each year replenishes the talent pool for the cluster. Additionally, Fundão's innovation initiatives have attracted a wave of skilled immigrants. By 2025, around 4,000 foreign nationals from 78 different countries are expected to reside in Fundão, making up approximately 15% of the municipality's population. Brazilians represent the largest immigrant group, accounting for about 25% of the immigrant population[30], many of whom are drawn by the shared language and opportunities in IT. Other nationalities present in the cluster include Indians, Nepalese, Ukrainians, British, and others, making Fundão's tech community notably cosmopolitan for a rural town. As one participant remarked, "*Talking about diversity... is almost redundant, because [Fundão] welcomes more than 70 nationalities*" (Interviewee 6, Male, Fundão-based Tech professional). This diversity is viewed as a core strength of the cluster, fostering a culture of openness and creativity.

In terms of **gender** representation, Fundão's cluster mirrors the broader male dominance characteristic of the gaming industry. However, conscious efforts have been made to improve

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[28] Digitality (Physically in Fundão); Revigoradamente; Coinny; NyX Games, Astus (Brazilian based companies involved in the Online Incubation program)

[29] To name some of the companies: StarMountain, uPinc, Strateegia, The Danyalgil Company, Incognito Cloud, Convevo,Latitudde,Capgemini, Logicalis, Readiness IT.

[30] https://www.bbc.com/portuguese/articles/c9qw13xl0xeo

gender balance, including inclusive programming for events (ensuring female speakers or moderators when possible) and city-supported initiatives aimed at encouraging girls to pursue careers in tech from an early age.

8.3.3 Institutional Support

As previously described, Fundão's gaming cluster thrives within a robust institutional support framework: strong municipal backing, educational institutions nurturing talent, an incubator and tech park offering infrastructure and mentorship, and associations that connect the cluster to broader communities. This multi-layered support structure plays a crucial role in defining and sustaining the cluster's identity and growth:

1. **Municipal Leadership**: The Fundão City Council acts as a de facto "cluster management organization." It plays an active role in promoting the cluster, with dedicated teams working to assist in the integration of newcomers and emerging businesses. The city is highly engaged in marketing the cluster and creating a welcoming environment for both talent and companies.
2. **Educational Institutions:** Local educational institutions, particularly the University of Beira Interior and the Polytechnic of Castelo Branco, are key players in the cluster's support network. They provide valuable research collaborations and a steady pipeline of talent, particularly in the fields of technology and game development.
3. **Infrastructure and Innovation Hubs**: Fundão's approach includes rehabilitating underutilized spaces to create environments conducive to innovation. In 2012, the municipality established *A Praça*, Fundão's first technology incubator, alongside the *Cova da Beira Living Lab*. These initiatives offer affordable co-working spaces, labs for startups, and a range of programs including training, mentorship, and business support.
4. **Financial Support:** While venture capital remains limited, Fundão has access to municipal grants and prize competitions for startups. Additionally, companies in the region can benefit from national innovation funds, with many local startups receiving support from Portugal 2020 EU funds[31].
5. **National Connections:** Fundão's cluster is also connected to national bodies like the Portuguese Association of Video Games (APVP). Many Fundão-based companies are now APVP members, and APVP has collaborated on events hosted in Fundão, further connecting the region to the broader national gaming industry.

This institutional frame provides the cluster with valuable resources, enhances its resilience, and helps expand its visibility beyond Fundão. The support network fosters both growth and the recognition of Fundão's gaming sector within broader national and international contexts.

8.3.4 Cluster «DNA»

The Fundão gaming cluster has cultivated a distinct identity, which is often described by stakeholders in terms of its **people-centric values**, **collaborative ethos**, and **quality of life**.

[31] https://portugal2020.pt/

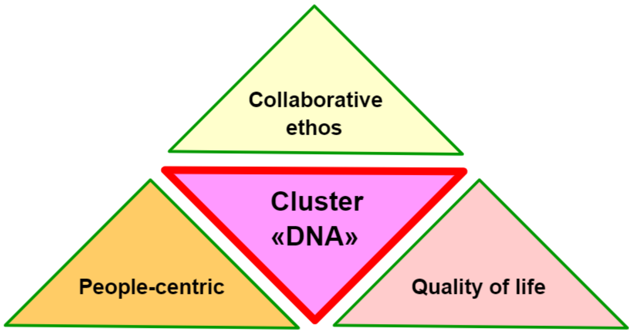

Figure 25 – Fundão DNA

This culture is exemplified by the integration of newcomers into the local community. As one interviewee noted, "*The population is fully integrated with those who arrive, and this is one of Fundão's greatest strengths. It's one of the few places where people truly feel welcome upon arrival*" (Interviewee 6, Male, Fundão-based Tech professional). Fundão's appeal lies in its high quality of life: a peaceful environment, affordable living costs, access to nature (such as the nearby Serra da Gardunha mountains), safety, and ease of accessibility, with many residents able to live car-free in the city centre. As one interviewee put it, "*Anyone who lives in the centre almost doesn't need a car*" (Interviewee 8, Male, Fundão-based Tech professional).

Furthermore, Fundão's cluster thrives on a narrative of collective success, emphasizing mutual support rather than competition. Companies in Fundão openly celebrate each other's achievements, as every new project or hire adds legitimacy to the entire cluster. One interviewee emphasized this spirit of collaboration: *" I can even say that my company would never have existed if it weren't for this, because the support we received—office spaces, mentoring, etc.—was fundamental. It was a key help for me to have the courage and resilience to carry on with this project for such a long time."* (Interviewee 4, Male, Company Representative). This collaborative culture is manifested in frequent knowledge-sharing, resource pooling, and joint initiatives that benefit everyone in the cluster. Firms often host workshops, training events, and other initiatives to "give back" to the community.

Another characteristic of the cluster's identity is its problem-solving mentality, driven by necessity. In the early stages, Fundão's gaming companies faced challenges such as a lack of publisher interest or technical expertise, but the community's collaborative spirit allowed them to overcome these hurdles. One Fundão-based professional recounted how they initially lacked certain expertise but were able to find solutions through local collaboration, describing it as a success of the community approach (Interviewee 6, Male, Fundão-based Tech professional). This mentality reflects Fundão's broader culture of "DIY innovation", where limited resources are seen not as a constraint but as an opportunity to innovate. It also connects to values of resilience and solidarity.

Fundão's innovation drive extends beyond the gaming sector, with cross-sector initiatives that include smart farming projects, Industry 4.0 implementations in manufacturing, and more. This cross-sector integration benefits the gaming cluster by providing opportunities for applied gamification and diversified funding sources. For instance, as early as 2017, the municipality launched gamification programs in sectors like education and civic engagement, providing local professionals with hands-on experience in game development. This helped legitimize gaming as a valuable tool for other industries and positioned Fundão as an innovation-friendly region. Mayor Fernandes emphasized that gamification is seen as a key model for creating relevant projects across various sectors, from health to data management. The cluster's growth is thus nurtured in an environment where gaming and interactive technologies are recognized as broadly valuable, rather than being confined to niche entertainment.

8.4 Cluster Evolution and Growth Strategy

8.4.1 Critical Moments and Phases

From its genesis in the mid-2010s, Fundão's cluster has gone through distinct phases of evolution, each marked by key developments that have shaped its trajectory. These phases, influenced by a combination of internal dynamics and external factors, reflect the cluster's growth from its initial formation to its ongoing maturation. Figure 26 illustrates the critical moments, developmental phases, and the factors driving the cluster's trajectory.

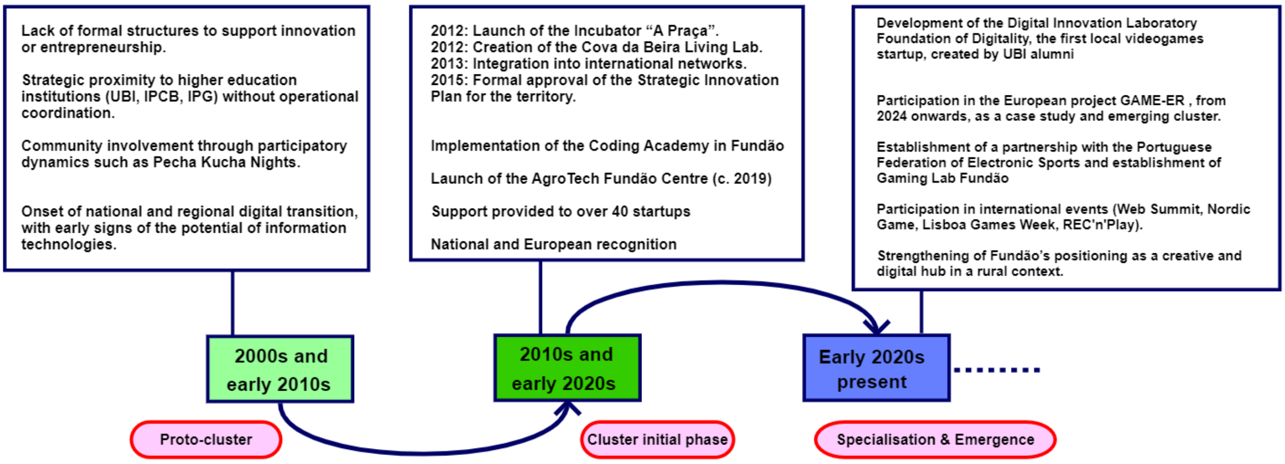

Figure 26 – Timeline of Fundão Video Game Cluster

After a formative Proto-cluster phase, where the foundational groundwork and strategic diagnosis were laid, Fundão's gaming cluster can be divided into two main evolutionary periods:

Genesis and Early Growth (2012–2020): This initial phase, highlighted in earlier sections, marks the inception of the cluster and its early proof of concept. The launch of the Fundão Innovation Plan in 2012 acted as the catalyst, followed by the arrival of the first tech companies, led by Altran. This validated Fundão as a viable location for tech firms and set the foundation for the gaming cluster. The cluster grew organically, and, during this period, the first gaming-related startups emerged (e.g. Digitality Game Studio), alongside the birth of informal groups of gamers, marking the beginning of a gaming community. Moreover, the region developed educational programs focused on game design, hosted gaming events, and increased participation in major gaming fairs. This sparked interest among local youth, many of whom started pursuing gaming-related courses or personal projects, recognizing that a career in gaming was viable within Fundão.

Community Consolidation and Specialization (2020–Present): The outbreak of COVID-19 in 2020 had a global impact, but Fundão's gaming cluster showed remarkable resilience. The shift to remote work, already a practice in Fundão, was particularly beneficial during the pandemic. As one interviewee put it, *"COVID, with all its problems, brought something positive: remote work. The fact people could work remotely led to improvements"* (Interviewee 8, Male, Fundão-based tech professional). This transition allowed tech professionals, many from Lisbon, to relocate to Fundão, attracted by the opportunity for more space and safety while continuing to work remotely for Lisbon-based firms. The cluster's membership expanded informally as a result.

Furthermore, local companies adapted to the new normal by hiring talent abroad, and the municipality actively facilitated these efforts. By the end of 2020, Fundão's cluster had not only weathered the pandemic but had experienced growth. This phase also marked a more focused shift towards gaming, as the cluster began to further specialize and more clearly define its position in Portugal's national ecosystem. Fundão's cluster members became vocal participants in national industry dialogues, underscoring how smaller, peripheral clusters can complement the larger hubs in Lisbon and Porto.

8.4.2 Evolution Curves

The evolution of Fundão's gaming cluster has been marked by significant phases, each characterized by *changes* in the composition of companies, major stakeholders, and the types of activities undertaken. These evolution curves highlight the gradual development of the cluster, from its inception to its current stage of growth and specialization. While Fundão has not yet become a well-known or major hub for gaming on the global stage, it has steadily built a foundation for future growth in this sector.

8.4.2.1 Proto-cluster Phase – First Evolution Curve

In the early years, Fundão had no formal focus on gaming. The Proto-cluster phase was defined by the absence of dedicated gaming companies and no significant efforts to establish a gaming industry. During this time, the focus was on laying the groundwork for technological development and economic diversification, primarily through local government and educational initiatives. The municipality began exploring ways to transition from its traditional agricultural base to a more technology-driven economy. Key stakeholders during this period were municipal authorities and educational institutions like Universidade da Beira Interior (UBI), which played a foundational role in fostering the early stages of talent development. However, there were no formal plans or activities centered on gaming, and the region was not yet thinking about gaming as a potential area for economic growth.

8.4.2.2 Genesis and Early Growth (2012–2020)

The Genesis and Early Growth phase, beginning in 2012 with the launch of the Fundão Innovation Plan, marked the beginning of the cluster's formal development. The first few years saw tech firms and IT services like Altran setting up operations in Fundão, which validated the region as a viable location for businesses. During this phase, the cluster's activities were more broadly focused on general tech development, rather than specifically on gaming. It was only around 2018 that the first gaming-related startups emerged in Fundão. These startups were small, with a few indie game studios and tech firms dabbling in game development. As a result, the gaming component of the cluster began to take shape, but it was still in its early stages, with few gaming companies and minimal industry-specific infrastructure. However, educational programs at UBI, such as the launch of the first video game development course in 2012, began to produce a small but growing pool of talent interested in pursuing careers in game development. The emergence of informal gaming communities, as well as the growing number of local students attending gaming-related courses, signalled the early formation of a gaming culture within Fundão.

8.4.2.3 Community Consolidation and Specialization (2020–Present) – Second Evolution Curve

The Community Consolidation and Specialization phase, which began around 2020, marks a period of greater focus on gaming within Fundão's broader tech ecosystem. While the COVID-19 pandemic caused disruptions worldwide, it also accelerated the adoption of remote work, a practice Fundão had already embraced. This allowed the cluster to attract professionals from Lisbon and other major cities, many of whom relocated to Fundão due to the region's lower cost of living and more spacious environment. These professionals brought new expertise and helped expand the cluster's capabilities, with several new game development projects emerging.

By this time, gaming had become more of a central focus, with a growing number of game studios, gamification firms, and tech companies becoming more specialized in the gaming sector. Fundão's cluster began to clearly define itself as a gaming-focused subset within the broader technology ecosystem. Gaming companies in the region shifted from basic development to creating commercial products, and the municipality increased its engagement with national industry dialogues to position Fundão as an important part of Portugal's gaming sector. This period also saw greater international collaboration, particularly with Brazilian game developers, as Fundão sought to build its reputation and presence within the global gaming community.

8.4.2.4 Shifting Stakeholder Composition and Evolving Activities

The composition of stakeholders has also evolved significantly. In the early years, local government and educational institutions played the dominant roles. As the cluster grew, however, private sector participation expanded, with more gaming startups and tech companies establishing operations. International collaborations also became more prominent during the Community Consolidation phase, as companies in Fundão worked more closely with foreign partners.

As the cluster matured, its activities became more specialized. In the early years, the focus was on community-building, talent development, and informal knowledge-sharing. In contrast, by 2020, the cluster's activities shifted towards commercial game production, collaboration with global tech companies, and cross-industry initiatives. This focus on game development and gamification projects has allowed the cluster to position itself within Portugal's broader tech and digital ecosystem.

8.4.2.5 Future Prospects

While Fundão is still not widely recognized as a major gaming hub, the evolution curves suggest that the cluster is well-positioned for future growth. The ongoing specialization in game development and interactive digital media, coupled with the continued influx of international talent and investment, signals the potential for Fundão to become a significant player in the European gaming industry. Fundão's commitment to fostering innovation across multiple sectors, such as smart farming and Industry 4.0, further supports the cluster's long-term viability. The region's ability to adapt to external shifts, such as the pandemic, while capitalizing on its strengths in education, remote work, and cross-sector innovation, suggests that the gaming cluster will continue to evolve and contribute to Fundão's growing role as a hub for digital innovation.

8.4.3 Factors of Change & Growth

The growth of Fundão's game cluster has been powered by the dynamic interplay of endogenous and exogenous factors, creating a virtuous cycle that propelled development, resilience, and gradual specialization.

Endogenous Factors

- **Political Will and Vision**: The steadfast political commitment of Fundão's leadership — notably Mayor Paulo Fernandes' 12-year tenure — has been the cornerstone of the cluster's emergence. This political will translated into rapid problem-solving, stable long-term planning, and concrete municipal support. One entrepreneur observed that political will is "*essential and sometimes the most difficult thing to find*" – Fundão had it (Interviewee 4, Male, Company Representative). The local government's determination to reverse the region's demographic and economic decline through technological innovation created fertile ground for the cluster's formation and growth.
- **Community Engagement and Talent Retention**: Fundão's capacity to retain talent has been anchored in both quality of life and the creation of real opportunities. The presence of institutions like UBI supplied a steady flow of young talent who increasingly chose to stay rather than migrate. The welcoming culture of Fundão, described by an entrepreneur as "*a place that I feel is very welcoming. It's a place that increasingly has more people, more diversity*" (Interviewee 4, Male, Company Representative), has also played a vital role in creating loyalty and community cohesion beyond financial motivations.
- **Collaborative Culture**: The cluster's collaborative spirit has been crucial. When technical or market challenges arose, informal mentorship and peer support provided solutions. An External Industry Mentor praised this culture: *"One of the things that always surprised me is how collaborative and willing to help [the games industry] is" (Interviewee 3, Male, External Industry Mentor)*, noting how Fundão exemplifies this at the micro-scale, accelerating collective learning and problem-solving. In addition, a Fundão-based Game-developer expressed: "*All startups within this innovation ecosystem bring benefits and add value, making this environment very positive, as everyone supports each other a lot*" (Interviewee 7, Male, Fundão-based Game Developer) and another Game Studio Owner based in Fundão mentioned that "*in our first commercial game, it actually had a component of multiplayer, a multiplayer framework that we did not have experience at the time at, but we were able to find a local developer that did have some kind of experience within that role. So, we cooperated in that very game for a very specific subset of the work that we had to do with them." (Interviewee 2, Male, Local game studio entrepreneur).*

- **Flexibility and Diversification**: The cluster deliberately avoided limiting itself to entertainment games, instead applying game development skills across diverse contexts such as education, tourism, and civic engagement. This flexibility has been a key driver of resilience, enabling companies to sustain operations through market fluctuations and ensuring the cluster remained relevant to broader local priorities. Moreover, this adaptability strengthened the cluster's ability to secure external funding by aligning projects with regional development goals and funding criteria.

Exogenous Factors

- **Global and National Industry Boom**: The global gaming industry's pandemic-era explosion provided crucial tailwinds. National developments like the APVP association creation (2021) and the Portuguese Recovery Plan recognition elevated the cluster's profile and funding access. Mayor Paulo Fernandes observed, "*There was a tremendous explosion in the sector during the pandemic… further boosting the sector.*" This surge not only amplified the visibility of gaming as a key economic driver but also attracted new investment flows and reinforced the strategic rationale for Fundão's continued investment in its gaming cluster.
- **Technological Democratization**: The widespread availability of accessible tools such as Unity, Unreal Engine, and digital distribution platforms (Steam) has significantly lowered traditional barriers to entry, allowing small teams in Fundão to produce high-quality games and access global markets. This technological democratization has been instrumental in enabling Fundão's studios to collaborate seamlessly and compete beyond regional boundaries.
- **Societal Trends**: Portugal's broader narrative of interior revitalization has helped position Fundão as an emerging success story. The post-COVID shift, marked by an urban exodus driven by rising living costs in coastal cities and the normalization of remote work, made Fundão an attractive destination for skilled professionals seeking a higher quality of life. As an entrepreneur stated "*Life in big cities is becoming increasingly difficult (…) People waste a lot of time in traffic, everything is expensive. Rent is high. People struggle to survive (…)*" (Interviewee 4, Male, Company Representative). This demographic shift has reinforced the cluster's growth by bringing in new talent and fostering a more diverse, dynamic community.
- **Government Programs**: National and European programs—such as the Portuguese Recovery and Resilience Plan (PRR) and Horizon Europe—have provided external resources that fuelled the cluster's development. Initiatives like the **GAME-ER** project delivered resources that directly supported cluster activities, helping to strengthen local capacity and visibility. Beyond specific projects, national incentives for companies operating in Portugal's interior, together with EU funding streams and creative industry support schemes, created an enabling environment that cluster leaders have strategically leveraged to sustain growth and drive innovation.

These internal and external factors were combined in reinforcing cycles: political will enabled the effective capitalization of external funding; the cluster's collaborative culture strengthened external partnerships; and strong performance earned external recognition, attracting additional resources. Local leadership and community commitment provided the decisive catalyst, while industry growth amplified development. Looking ahead, the cluster faces the challenge of sustaining this momentum — ensuring political continuity through leadership transitions, retaining talent amid economic pressures, and navigating potential market shifts.

8.5 Collective Actions

Fundão's small, but dynamic, video game cluster relies fundamentally on collective action and collaboration to achieve outcomes that no individual actor could accomplish alone. The ecosystem's success stems from the way stakeholders pool resources, coordinate efforts, and jointly address common challenges. These collective dynamics foster resilience, innovation, and visibility at local, national, and international levels.

8.5.1 Main Activities and Collective Actions

The cluster's collective actions encompass a wide range of coordinated activities designed to build capacity, enhance visibility, and strengthen the local ecosystem:

- **Networking and Community-Building Events:** Regular meetups convened by City Hall and other actors create spaces for interaction between developers, students, educators, and local officials. The cluster collectively participates in external showcases (e.g., Lisbon Games Week, WebSummit, Nordic Games Conference) and organizes local gatherings. Examples include:
    - **Café na Praça:** An informal networking forum where tech professionals, entrepreneurs, and students regularly exchange ideas and forge connections over coffee. As a Fundão based Game Developer stated "*Café na Praça, an event that takes place here in the municipality, and in which I have actively participated. I think that since I arrived, I have attended all of them. They bring in specialists to talk with us and help us understand more about specific topics. The last one, for example, was about security." (Interviewee 7, Male, Fundão-based Game Developer).*
    - **Thematic nationality lunches**: Gatherings that celebrate the cultural diversity of Fundão's growing international tech community, strengthening social cohesion and mutual understanding. As one entrepreneur highlights *"The other day here at the incubator, there was an Indian festival, sometimes there's a Brazilian festival, and that also helps people from other nationalities integrate into these initiatives." (Interviewee 4, Male, Company Representative).*
- **Joint Training and Mentoring Sessions**: The cluster actively organizes collaborative workshops, bootcamps, and mentoring initiatives designed to address shared skill gaps and strengthen the local talent pool. These actions are central to the cluster's strategy of building human capital and fostering resilience. Notable examples include:

- **Academia de Código:** A coding bootcamp initiative that helps reskill local youth and adults, generating new digital talent to feed into the cluster's technology and creative industries. *"Other significant milestones include initiatives like Academia de Código, which started training people with no programming experience to enter the technology market, and the push to teach programming to children from the 6th grade onward, which brought a significant change."* (Interviewee 6, Male, Fundão-based Tech professional).
- **Training Sessions,bootcamps, pitching workshops,** and other specialized training events co-promoted by City Hall or funded by regional grants, and occasionally corporate sponsors. These programs address technical, design, and business skill gaps identified collectively by cluster members. *"There are several opportunities throughout the year where pitching is incentivized and having opportunity to do that to an open public and that kind of training for business development is super important for companies. Obviously, it is one of the main ways that companies do get to build and thrive within this industry.",* describes a Game Studio Owner (Interviewee 2, Male, Local game studio entrepreneur).
- **Mentoring sessions for companies based in the incubator:** Tailored guidance and support provided by experienced professionals to startups and small firms. These sessions help entrepreneurs refine business strategies, overcome technical challenges, and accelerate product development. The mentoring is part of a structured approach supported by the incubator, City Hall, and ecosystem partners to ensure that emerging companies can access practical expertise. *"We have a space to work in. We've had all the mentoring and weekly meetings we've had since I started this project here in the incubator. We have weekly meetings to help us develop our business plan and KPIs to evaluate the product and everything"*, states a member of the Incubation plan (Interviewee 4, Male, Company Representative).

- **Cluster Marketing**: Cluster marketing in Fundão is characterized by coordinated efforts that aim to enhance the visibility of all members, regardless of size or maturity. These efforts focus on building a shared identity that amplifies the collective value of the ecosystem rather than promoting individual actors in isolation. Activities include the preparation of joint promotional materials that showcase the cluster's capabilities, as well as collective media engagement designed to present a unified narrative about Fundão as an emerging hub for digital and creative industries. The cluster collaborates to ensure a coherent and strategic presence at national and international events, enabling members to benefit from shared exposure, cost efficiencies, and increased credibility when representing Fundão on larger stages.
- **Policy Advocacy**: Policy advocacy has been a central collective action within Fundão's video game cluster, reflecting the ecosystem's ability to organize and influence regional development priorities. Through joint efforts—particularly involving the municipality, educational institutions, and local companies—the cluster successfully contributed to the formal recognition of digital games as a priority industry within regional development frameworks. This designation has been

instrumental in unlocking access to targeted funding schemes and in legitimizing the gaming sector as a driver of economic diversification in the region. The cluster's policy engagement also strengthened its alignment with national and European strategies for innovation and the creative industries, creating new opportunities for participation in funding programs and collaborative initiatives.

8.5.2 Stakeholders' motivations and benefits

The sustained success of Fundão's cluster is underpinned by the alignment of motivations across its diverse stakeholders. Each actor participates in collective actions because they derive tangible and strategic benefits that reinforce their ongoing engagement and contribution.

- **Game Studios:** Local studios participate primarily to enhance their learning, visibility, and operational efficiency. They contribute technical expertise, mentoring, and content to joint projects while gaining access to shared resources, collaborative problem-solving, and greater exposure in national and international arenas. This cooperative environment reduces individual costs and risks while amplifying market opportunities.
- **Municipality (City Hall):** The municipality's involvement is driven by its broader goals of regional, societal and economic development, population retention, and place branding. By providing venues, funding, staff time, and convening power, City Hall helps to catalyze initiatives that generate employment, stimulate local business ecosystems, and enhance Fundão's reputation as a progressive, innovation-friendly locality. The return on this investment is visible in job creation, increased civic pride, and the attraction of external funding and talent.
- **University of Beira Interior:** UBI's engagement reflects its mission to enhance student employability, strengthen regional impact, and align academic offerings with industry needs. The university provides research collaboration, facilities, and talent pipelines to the cluster. In return, it gains opportunities to enrich student experiences, produce applied research, and co-develop industry-relevant curricula.
- **External Partners:** External actors, including national associations, private sponsors, and international collaborators, are motivated by the chance to expand their networks, discover new talent, and contribute to a model of rural innovation. Their involvement also helps them fulfil corporate social responsibility objectives and access innovative ideas and pilot projects.
- **Community at Large:** The local community benefits indirectly but significantly from the cluster's activities through economic spillovers, inspirational educational initiatives, and increased cultural vibrancy. The cluster contributes to civic pride, raises aspirations among young people, and supports a narrative of positive regional transformation.

In sum (Table 24), the collective action framework generates mutual value across all stakeholder groups, creating win-win dynamics that reinforce trust, cooperation, and the long-term sustainability of the cluster.

Stakeholder	Motivations for Participation	Key Contributions	Main Benefits Gained

Game Studios	- Shared learning - Enhanced visibility - Resource efficiency	- Technical expertise - Mentoring - Content for joint projects	- Skill enhancement - Market exposure - Cost savings
Municipality (City Hall)	- Economic development - Population retention - Regional branding	- Venues - Funding - Staff time - Convening capacity	- Job creation - Enhanced reputation - Attraction of investment
UBI (University of Beira Interior)	- Student employability - Regional impact - Industry alignment	- Research collaboration - Talent pipeline - Facilities	- Applied research - Improved student outcomes - Stronger curricula
External Partners	- Network expansion - Talent discovery - Support for rural innovation	- Expertise - Networks - Sponsorships	- Access to new ideas - Collaboration opportunities - CSR fulfilment
Community at Large	- Desire for local development - Educational inspiration	- Civic participation - Social support (indirect role)	- Economic multipliers - Cultural vibrancy - Civic pride

Table 24 – Fundão Cluster Stakeholders: Motivations, Contributions, and Benefits

8.5.3 Networks & Collaboration

Fundão's cluster network has matured from an initial hub-and-spoke structure, where City Hall served as the primary connector, into a more distributed model with multiple central actors. Today, City Hall, UBI, and leading companies such as Digitality act as key nodes that coordinate activities, share resources, and link different parts of the ecosystem. The network is characterized by dense internal ties that support fast, coordinated action, and by strategic external connections that extend the cluster's reach to national bodies, international partners, and funding opportunities. Importantly, the cluster is now actively expanding its international networks, with a particular focus on strengthening collaborations with markets such as Brazil, where linguistic and cultural affinities provide a strong basis for partnership. For instance, five Brazilian game studios and tech companies are currently part of Fundão's online incubation program, as they prepare to relocate and integrate physically into the ecosystem in the near future. This reflects the cluster's growing complexity, openness, and ambition in building global connections while reinforcing its collective capacity for innovation.

8.5.4 Mobilized Resources & Competencies

The development and resilience of Fundão's cluster are supported by a wide range of mobilized resources and complementary competencies that are shared across stakeholders:

- **Human Resources:** The cluster benefits from a collaborative culture where professionals contribute not only through formal employment but also via voluntary mentoring, training delivery, and participation in joint initiatives. This spirit of knowledge-sharing helps spread expertise across firms, startups, and educational institutions, enhancing collective capacity.

- **Physical Infrastructure**: City Hall and associated incubators provide the essential infrastructure that underpins the cluster's operations. This includes co-working spaces, meeting facilities, and access to advanced technological equipment such as those found in the FabLab — including tools for prototyping, 3D printing, and virtual reality development — made available to cluster members at low or no cost. Furthermore, the Municipality is finalizing the creation of a dedicated Gaming Lab, designed to provide all the necessary resources for game production. This new facility will serve as a central hub for game developers, offering shared technical assets, production tools, and collaborative spaces that enable studios and independent creators to jointly innovate, develop projects, and strengthen the collective capacity of the ecosystem.
- **Financial Resources:** The cluster draws on a mix of municipal funds, regional development grants, EU programs, and occasional private sponsorships. City Hall's innovation budget provides consistent seed funding for events, training activities, and marketing efforts, while regional and European funding mechanisms contribute to more substantial project financing.
- **Competencies and Know-How:** The ecosystem integrates diverse technical, creative, and business skills. This includes software development, game design, art, animation, business development, and project management competencies. The cross-pollination of these skills within collaborative projects promotes innovation and enables the cluster to address challenges flexibly, including adapting game technologies for educational, cultural, and civic applications.

This multi-layered resource and competence base provides the foundation for sustained cluster activities, allowing Fundão's ecosystem to punch above its weight in Portugal's digital and creative industries landscape.

8.5.5 Coordination & Control Formal Structures

The governance of Fundão's cluster remains predominantly informal and trust-based, reflecting the close-knit nature of the ecosystem. Coordination is facilitated through practical and accessible tools, including WhatsApp groups, Discord servers, and regular informal meetings, which enable rapid communication and decision-making. Leadership responsibilities are distributed among key individuals who guide domain-specific areas.

The cluster's cohesion is reinforced by strong values of reciprocity, solidarity, and mutual support, which help sustain cooperative behaviour in the absence of formal contracts or rigid hierarchies. While this flexible structure has proven effective during the cluster's formative years, discussions are underway about the potential formalization of governance through the creation of a dedicated Gaming Hub or Association. Such a body could provide greater structural stability as the cluster scales and engages more intensively with national and international stakeholders.

8.5.6 Financial Aspects

The financial model of Fundão's cluster is defined by cost-sharing, in-kind contributions, and a strong ethos of collective responsibility. Most activities — including training sessions, networking events, and promotional initiatives — operate on a non-profit basis, with costs distributed across participating stakeholders. This collaborative approach allows even small studios and startups to engage in activities that might otherwise be beyond their individual means. The cluster's funding sources are diverse, combining municipal innovation budgets, regional development grants, and modest private sponsorships. This mix provides flexibility while reducing dependency on any single funding stream. Importantly, the cluster maintains a high degree of financial transparency, which reinforces trust among participants and encourages continued collaboration. Beyond direct funding, participants benefit from indirect returns — such as publishing opportunities, client referrals, and enhanced market visibility — that help offset their contributions and further justify engagement in collective actions.

9 CONCLUSION

This deliverable has presented the findings from a qualitative investigation into video game clusters located in six non-capital, some of them peripheral, cities across Europe. Drawing on a series of in-depth interviews with a wide range of stakeholders, including developers, entrepreneurs, educators, policymakers, and support organizations, the study has begun to map the unique characteristics and shared dynamics of these emerging creative ecosystems.

The interviews revealed that, despite their geographical distance from major metropolitan centres, these clusters can be vibrant hubs of innovation and creativity, albeit facing a series of challenges too. The findings underscore the importance of local institutions, cultural infrastructure, and tailored policy support in fostering sustainable growth in these regions. They can benefit from aspects such as strong local identities, close-knit communities, and often a high degree of informal collaboration. They also face common challenges, such as reliance on work-for-hire, talent retention, and the need for greater visibility on national and international stages. Apart from these similarities, there are also some notable differences.

Firstly, the notion of a cluster does not refer to a homogenous reality. We have selected six cases (seven including Angoulême, part of the Bordeaux cluster) presenting a variety of configurations, with the common features of being able to be considered clusters and not being in national capitals. This initial analysis confirms this diversity, and the need for a typology of clusters. Firstly, the size of the areas studied and the weight of the video game industry within them. Except for Fundão (30 000) and Angoulême (40 000), the towns at the heart of the clusters studied have between 150,000 and 1.7 million inhabitants, between 15 and 120 companies and between 200 and 4,000 video game employees. In Brno and Dundee, the numbers of employees and companies are modest compared with Bordeaux or Lyon, but they have higher densities when the size of the conurbations is considered. At this stage of our study, we don't know how to qualify a cluster in quantitative terms, other than in terms of reputation: they are clusters because they have the reputation, internally or externally, of being clusters. To understand the virtuous dynamic of clusters, we need to understand on what dimension critical mass is based: a volume of companies or talent, or a density?

The relevant perimeter is also highly variable and seems to be determined by the networking dimension. The presence of an active association defines the boundaries of the cluster. In Bordeaux and Lyon, the scale of the cluster is defined by the trade association, i.e., the regional scale. The availability of communication tools (Slack, Discord) makes the feeling of belonging to a cluster on this scale effective.

This diversity is also reflected in the dynamics of emergence and evolution. The cities studied have varied economic pasts: jute and newspapers for Dundee, wine for Bordeaux, textiles and machinery for Brno, chemicals and silk for Lyon, agriculture for Fundão, car manufacturing for Turin. This seems to indicate that there are no deep historical conditions for hosting the video game industry. The initial sparks or founding events also take different forms. Nevertheless, the four largest clusters in our study involve the development (Bordeaux, Lyon) or settlement (Brno, Dundee) of video game or IT companies that will bring a critical mass of skills. Other events play an important role in the dynamics of clusters: the formation of groups, the establishment of schools, the creation of an incubator or accelerator. We must stress the element of chance that is typical of creative industries ("nobody knows" property, Caves (2000)): the success of companies such as Kalisto (Bordeaux), Infogrames (Lyon) or games such as *Lemming*, *GTA* (Dundee), *Mafia* (Brno) have given decisive impetus to the development of the local industry. It should also be noted that the birth of the cluster does not refer to a homogeneous perception: in some cases, it is the founding act of networking, in others it is the appearance of the first visible video game companies. This duality refers to the dual dimension of clusters, territory, and network.

The drivers of growth are also variable: external growth, through the establishment of subsidiaries of large companies (Bordeaux), spin-offs or senior entrepreneurship (Bordeaux, Turin, Lyon) or 'junior' entrepreneurship coming out of schools or incubators (Angoulême, Dundee). In the common analysis grid, we suggested identifying the DNA of each cluster. Apart from Angoulême, which has a very pronounced indie identity, the other clusters have little specialization and are home to companies with a wide range of positions: subsidiaries of major international companies, studios of varying sizes right down to very small companies. This aspect will be explored in greater detail later in our analyses.

In all the cases studied, the development of clusters seems to be accompanied by the same ingredients: the emergence of collective actions, whether centralized within an association or not (trade fairs or conferences), structured or unstructured networking, training and support for business creation. Except for Turin, the involvement of public authorities is another common element. The cases studied highlight a focal or central player, who has a different position: an association in Bordeaux, Brno or Lyon, a university in Angoulême and Dundee, a building in Turin. This general observation raises a chicken-and-egg question: are these conditions necessary for a cluster to develop, or are they, on the contrary, needs that emerge as a cluster grows?

Clusters are formed at different times: Bordeaux, Dundee and Lyon appeared in the first wave of structuring of the video game industry, before the Internet bubble burst in 2001, unlike the other clusters. The dynamics of the emergence and structuring of a video game cluster depend on the time dimension, in a sector which has been very cyclical and where developments are very rapid. After the dotcom bubble, other major factors changed the relationship between companies and the area in which they are based: the dematerialization of distribution and the COVID-19 crisis, which accelerated the development of teleworking. To learn from these stories, it is important to take these conditions into account.

While the interview phase has provided valuable insights into the lived experiences and perceptions of cluster participants, it represents only the first step in a broader research process conducted by **GAME-ER** on the six case studies. The next phase of WP4 will involve a comprehensive analysis of relevant documents, including regional development strategies, industry reports, funding frameworks, and educational initiatives. This documentary analysis, performed in T4.2 is undergoing, and it will help to contextualise the interview data better and potentially uncover clearer aspects about the formal structures and narratives that shape each cluster's development.

In addition, a historical analysis is also undergoing (in T4.3) to trace the evolution of each cluster over time. This will involve identifying key turning points, such as the founding of anchor institutions, the emergence of flagship studios, or the impact of other specific public interventions. Understanding the historical trajectories of these clusters will be essential for grasping how local conditions, institutional legacies, and external factors have influenced their current configurations.

All these findings will later in the project feed into Work Package 3 (WP3), which will conduct a comparative analysis across the six clusters. This comparative lens will allow us to identify both convergences and divergences in cluster development, offering insights into the broader patterns that shape the video game industry in non-metropolitan European contexts. By situating these clusters within a wider European and global framework, WP3 will contribute to the understanding of how place-based innovation systems operate outside traditional urban metropolitan centres. The comparative analysis will also be the basis for the formulation of policy recommendations.

Ultimately, this multi-dimensional approach aims to inform both academic debates and practical strategies for supporting creative industries in diverse regional settings. The next steps will be crucial in building a more comprehensive picture of how video game clusters emerge, evolve, and sustain themselves in Europe’s creative economy.

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