GAME/ MONITOR

THE NETHERLANDS **2015**

In 2012 the first edition of the Dutch Games Monitor was presented. Whilst maybe not the first research focusing on the Dutch games industry, it was the first where an extensive survey and a series of interviews provided a broad insight into the state of the industry. In the past few years interest in games and data about the games industry has increased. Many people were interested in an updated version of the Games Monitor. We are therefore happy to announce that in 2015 we had the opportunity to cooperate with a number of parties and can provide you with this second edition of the Games Monitor.

The Games Monitor 2015 presents an overview of the economic development of the Dutch games industry. Research was conducted in the same manner as in 2012 in order to compare the figures and give you an insight into the changes in the industry. After an extensive selection of companies who we consider to be a part of the industry (see **chapter 1** for a description of the definition and the appendix for more details on the research process), a questionnaire was sent to more than 400 companies. One hundred and thirty companies filled in the questionnaire. Once again many thanks to all of you who did! Without your contribution this report would be incomplete. Other contributors are educational institutes, who offer minors, full-time or part-time courses or degrees in games.

After presenting the preliminary results in Utrecht at the Applied Games Summit of the Control Conference 2015, we took some time to discuss the results with the industry. Thank you to everyone who contributed during the round table discussions, on digital platforms and at the DGA-day in Leeuwarden on the 3rd of December, 2015. As a result the Games Monitor includes data from surveys, interviews, discussions and desk research.

The Dutch Games Monitor is divided into **7 chapters. Chapter 1** introduces the Facts and Figures of the Dutch games industry. Subsequently we look into the trends and developments for applied and entertainment games separately, since these markets differ quite substantially (**chapter 2** and **3** respectively). After gaining insights into game education (**chapter 4**), we present a more in-depth analysis of the challenges the industry faces to achieve growth (**chapter 5**). To put things into some international perspective we also provide some main game industry findings of other European countries and use Poland as a case study to compare developments. (**chapter 6** and **7**)

We are looking forward to continued and future discussions about the growth and development of the Dutch games industry on mediums such as the Drives platform of the Dutch Games Association **(www.dutchgamesassociation.nl)**

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MANAGEMENT SUMMARY

The Games Monitor 2015 presents an overview of the economic development of the Dutch games industry between 2011 and 2015. A questionnaire was sent to more than 400 companies and returned by 130 companies. Following the presentation of the preliminary results, several industry roundtable discussions were held to further verify and analyze the findings.

DEFINITION

The games industry includes all companies whose core activities include at least one of the following processes in the value chain: the development, production, publication, facilitation and/or electronic distribution of electronic games.

The Games Monitor further discerns two domains in the games industry: entertainment games and applied games. Entertainment games entail all electronic games that have entertainment as their primary goal. Applied games, also referred to as serious games, aim to inform, educate or train end-users. Applied games are developed and distributed across sectors, including education, health, transport, marketing, and defense.

COMPANIES AND JOBS

The findings show a rapid growth in the number of companies, from 320 in 2011 to 455 in 2015, an increase of 42%. The same period also saw a large number of companies close for business (110), which makes the overall growth even more impressive.

> THIS 42% GROWTH IS MOSTLY DRIVEN BY NEW GAME DEVELOPERS.

Whether these new companies will actually succeed in creating a sustainable business, or make the difficult transition from a start-up to a scale-up, remains one of the biggest challenges for the Dutch (and European) games ecosystem.

The number of professionals working in the Dutch games industry has grown as well, albeit much slower than the number of companies: from 2730 in 2011 to 3030 in 2015. The annual job growth of 2.6% is above the national average of -0.4% in 2011-2015. Companies are young (more than half are less than 5 years old) and relatively small (average number of employees is 7).

TURNOVER AND PROFIT

The positive worldwide trends are, to some extent, reflected in the developments of the Dutch games ecosystem. The analysis reveals that over 60% of Dutch game companies saw a growth in revenues, with an aggregated turnover of €155-225 million. However, most profits are modest (up to €100,000).

ENTERTAINMENT VERSUS APPLIED GAMES

Another striking development is the distribution of growth between entertainment and applied games. Whereas applied games still have a strong foothold in the Dutch games industry, the last couple of years saw a surge in the number of companies focused on entertainment games.

Applied games

Applied games remain an important pillar of the Dutch games industry. The total number of companies involved in applied games grew by 28% to 158 companies.

During the 2011–2015 period, most applied game studios indicated a sharp decline in clients in 2013 and particularly in 2014. The magnitude of this decline was so severe that the continuity of some dedicated applied games studios was threatened. Some of these companies scaled down, leading to layoffs.

In 2015 the number of tender requests began rising sharply. Some companies chose not to increase their workforce but opted instead to consolidate and minimize risks rather than increase profits (and risk).

A striking trend the past years is an increase in partnerships in aspects such as marketing and promotion, strategic alliances and funding. Game companies have joined forces to maintain a sustainable business and scale up internationalization. There is almost no specialization in the type of sectors and clients applied game companies work for. The educational and healthcare sectors are slightly larger than other domains of application.

Currently, most of the projects completed by applied game studios are driven by client demands.

To scale up the applied games market, a more product-based approach, where companies develop games that are applicable and sellable to many clients, is necessary. This provides a need to move away from producing 'one-off' solutions for individual clients.

Dealing with issues related with operating in an innovative field and validation of applied games remain challenges for all applied game companies.

Entertainment games

Comparing the data from the 2012 Games Monitor to 2015, two findings are notable. First, there was a considerable growth in the number of entertainment game development studios, almost doubling from 83 to 160. Second, the increase in game development studios was not mirrored by a similar increase in the number of professionals working in entertainment. The number of jobs remained more or less the same (approx. 860 fte).

In order to be successful and keep up with the demands of the users and publishers, larger teams are necessary. Over the past few years, successful studios are relatively large (11 to 25 people) and have more than five years' experience.

Success in not guaranteed in an ever-changing industry with a myriad of business models, increasing numbers of platforms and tech engines and shifting user demands. Competition remains fierce, making it even more difficult for talented, young, small studios to find their niche in the market and continue to grow after their initial launch.

Dutch entertainment game studios are moderately successful at the moment. Specifically, new studios lack a dedicated business and/or marketing expertise that can help successfully identify market demands and launch a product in that segment.

GAME EDUCATION

The number of full-time game programs has increased by 25% from 35 in 2012 to 44 in 2015. Next to dedicated programs, many knowledge institutions also offer a range of game minors and single courses to their students. This has resulted in a significant increase of the total number of game-related minors and courses from 9 in 2012 to 22 in 2015. The annual outflow of all game students has grown to approximately 1600 for fulltime and part time courses combined.

A mismatch between industry needs and educational levels has been ascertained.

> ## SOME GAME STUDIOS ARE EXPERIENCING DIFFICULTIES FINDING QUALIFIED INTERNS/ EMPLOYEES AND CHOOSE TO LOOK ABROAD.

Most experts agree that a business-oriented course should be added to game majors/masters. More knowledge on entrepreneurship is needed.

EUROPEAN COMPARISON

Similarities between the Dutch and other European game industries are the small size of companies and a growth of new studios. The Dutch games industry has a heavy focus on applied games and a significantly smaller turnover per employee due to the lack of large and successful studios.

RECOMMENDATIONS

Eight recommendations are provided based on the results of the Games Monitor 2015 and the roundtable discussions with the industry:

- Foster an entrepreneurial mindset in the educational setting and in start-ups
- Manage expectations and create a healthy sense of realism concerning the chances to become a highly successful studio
- Promote matchmaking between creatives & business.
- Be aware of business models and the shifts in the market.
- Scale up via partnerships, mergers and pooling resources to increase the chance of growth.
- Capitalize on IP to increase the chance of growth.
- Focus on a more product-based approach rather than a single game.
- Increase awareness in the financial sector of the added value of games and vice versa.

1. THE DUTCH GAMES INDUSTRY FACTS AND FIGURES 2015

The global games market continues to grow impressively. 2015 marked an annual growth of more than 9% totaling $91.5 billion [1]. For the applied or serious games market, impressive growth figures are reported [2].

How does the Dutch games industry profit from these developments and how has the number of companies and jobs evolved since the last Games Monitor was published in 2012?

To answer these question, we analyzed the developments of all companies in the Dutch gaming industry. The overall conclusion that can be drawn from the data is that the Dutch gaming industry is a young, fast-growing and dynamic sector. The number of game companies increased from 320 in 2011 to 455 in 2015. However, one third of the game companies (110 companies) active in 2011 did not survive the last four years. As a result, more than half of the game companies is less than four years old.

The substantial growth in game companies can largely be attributed to an increase of new game developers. The growth in the sector is volatile, fueled by fast paced and ever-changing developments in underlying technologies, platforms and business models. It therefore remains to be seen how many of these new companies will actually succeed in creating a sustainable business, or make the difficult transition from a start-up to a scale-up, which is one of the biggest challenges for the Dutch (and European) gaming ecosystem.

This chapter presents an overview of the economic developments of the Dutch games industry for the period 2011 - 2015. Research was conducted using the same methodology as in 2012, taking the databases from Control and Dutch Game Garden as a starting point. [3] Bear in mind that the facts and figures presented in this chapter focus on the direct economic impact of the games industry. The overall economic and societal impact of games, however, is expected to be much higher.

1.1 Scope matters: the games industry defined

In order to measure the economic impact of the games industry, a clear definition of a game company is needed. The OECD (2009) [3] defines the content and media industry as: "Content and media industries [who] are engaged in the production, publishing and/or electronic distribution of content products".

Similarly, the games industry includes "companies that develop, produce, distribute and facilitate electronic games".[4] Using the above mentioned criteria, the games industry is defined as:

> ALL COMPANIES WHOSE CORE ACTIVITIES INCLUDE AT LEAST ONE OF THE FOLLOWING PROCESSES IN THE VALUE CHAIN: THE DEVELOPMENT, PRODUCTION, PUBLICATION, FACILITATION AND/OR ELECTRONIC DISTRIBUTION OF ELECTRONIC GAMES.

The Games Monitor discerns two domains in game development: entertainment games and applied games. Entertainment games entails all electronic games that have entertainment as the primary goal. Applied games, also referred to as serious games, aim to inform, educate or train end-users. Applied games are developed and distributed in many sectors, including education, health, transport, marketing and defense.

1. Newzoo (2015), 2015 Global Games Market Report, www.newzoo.com
2. Idate (2015), Serious Games market report, www.idate-research.com
    Marketstomarkets (2015), Serious Game Market by Vertical (Education, Corporate, Healthcare, Retail, Media and Advertising), Application (Training, Sales, Human Resource, Marketing), Platform, End-User (Enterprise, Consumer), and Region - Forecast to 2020, www.marketstomarkets.com.
3.   OECD. (2009). Guide to measuring the information society. OECD/OCDE
    Read more at http://www.newzoo.com/insights/global-games-market-will-grow-9-4-to-91-5bn-in-2015/#qGPUOMUUEg1vcuiy.99
4. A more detailed description of the data and research methodology is provided in the Appendix.
5. Koops, O. & T. Bachet (2012), De Nederlandse gamesindustrie in cijfers, In: Taskforce Innovatie Utrecht (2012) – Gamesmonitor 2012, Utrecht.

Besides game development, the following types of actors are involved in the value chain of the games industry: game technology supplier, service provider, publisher and distributor (see Games Monitor 2012 [5] for a more extensive description of the value chain).

The current definition will be referred to as the core definition of the games industry because it selects a part, and not all, of the economic impacts of gaming activity in the Netherlands. Game development must be one of the core activities of the company in order to be deemed part of the games industry. The selection criteria that a significant part (at least one third) of the company's turnover and/ or strategic focus should be on the development, production, publication, facilitation and/or distribution of electronic games.

As a consequence, many organizations that are actually active in the applied gaming industry (clients, educational institutions, research institutes), were excluded from our analyses. Clients can range from advertising agencies, hospitals and the Ministry of Defense to several public authorities and training agencies. In many cases, these companies are often already active in domains for applied gaming, such as education, health, and marketing. They use games or elements of games to enrich their product portfolio ('gamification') but are not a gaming company. In such cases, gaming is not the core business of the company, but a secondary activity. For example, an advertising company may develop a campaign on social media that includes a game. The same goes for a museum that develops an online game for its visitors or Philips that employs an in-house group of game developers for their health product portfolio.

Another example is e-learning. E-learning companies have learning and education as a primary goal and use games as part of the e-learning concept. The e-learning concept however is not an electronic game. Also, some large companies, such as the Ministry of Defense and TNO, cannot be defined as a gaming company, although their in-house game development activity can be significantly large.

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Examples of game activity in the Netherlands outside the scope of the core definition of the games industry

There are currently 455 companies in the Netherlands that meet the core criteria and are part of the games industry. To show the difficulty of defining the borders of the definition, below is a list of examples of companies that are excluded from the scope of the core definition but who are involved in the gaming ecosystem.

◆ MEDIAMONKS
MediaMonks is a large, global creative digital production company that works for and with advertising agencies to craft amazing digital work for global brands. The Dutch location of MediaMonks has more than 100 employees, including 15 game developers. Gaming however is not a core activity of MediaMonks.

◆ MOTEKFORCE LINK
Motekforce Link develops high-quality rehabilitation technologies and real-time feedback, using virtual reality techniques. Motekforce Link uses game elements in their core business (rehabilitation training programs), but is not a game company.

Motek Entertainment BV, located at the same address is included in the list of game companies and focuses on innovative 3D animation, motion capture and VR.

◆ PHILIPS
Philips Eindhoven develops various medical games that are used for innovative multi-disciplinary development projects for Philips future products.

◆ KEESING MEDIA GROUP
Keesing Media Group publishes puzzles and games such as Denksport and Sudoku. They also develop apps for digital activity. In terms of turnover these activities are marginal compared to the physical games.

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1.2 Facts and figures of the games industry

To conclude, the core definition of the games industry captures the economic impact of companies that include gaming as their core business. The overall economic and societal impact of games, however, is expected to be much higher. Games and game mechanics are also adopted by companies who are active in all kinds of sectors such as education, health, finance, public safety, and energy. For these companies, games are not their core business but they do add value to their bottom line.

Impact measurement resulting from these crossovers are not included in this study nor are indirect impacts on the ecosystem of the games industry (customers, suppliers, institutional stakeholders etc. In order to capture the true and full economic impact of the game industry, future studies should ideally include the effects of in-house game activity in other sectors and the more indirect societal impacts of gamification.

KEY ECONOMIC INDICATORS

The 2015 Dutch games industry consists of 455 companies. They employ 3,030 people and report a total turnover of approximately €155-225 million in 2015. This indicates a rapid growth in the number of companies, from 321 in 2011 to 455 in 2015, an increase of 42%. The same period also saw a large number of companies close for business (110), which makes the overall growth even more impressive. This 42% growth is mostly driven by new game developers. The number of professionals working in the Dutch games industry has grown, albeit much slower than the number of companies: from 2,730 in 2011 to 3,030 in 2015. The annual job growth of 2.6% is above the national average of -0.4% during 2011-2015. Furthermore the developments in this time span indicate that the dominant position of game development in the value chain for games has increased.

Table 1.1: Key economic indicators of the Dutch Games Industry 2015

Value chain	Turnover 2015 (mln euros)	Jobs 2015	Companies 2015	Jobs per company	Jobs growth [1] 2011-2015	Company growth [1] 2011-2015
Game Producer	115 - 145 [2]	1865	352	5.3	410	107
Game producer / publisher	–	320	19	16.8	-80	8
Publisher	15 - 25	275	23	11.9	25	0
Distributor	10 - 20	185	11	16.8	30	0
Technology suppliers	10 - 20	230	10	23.0	-115	0
Service provider	5 - 15	155	40	3.9	25	19
NL Games industry	**155 - 225**	**3030**	**455**	**6.7**	**300**	**134**

Scource: TNO/NED Observatory, based on data from CONTROL/Dutch Game Garden/LISA/CBS

1. A strict use of the definition led to a correction of the figures for 2012 Games Monitor. Ten companies whose core focus is not games were deleted. These companies employed 300 people at that time. Additionally, some game companies were reassigned in the value chain.
2. The turnover of Game developer and Game developer/publisher are shown together due to the dominant position of Spil Games in the category Game developer/publisher.

ENTERTAINMENT VS APPLIED GAMES

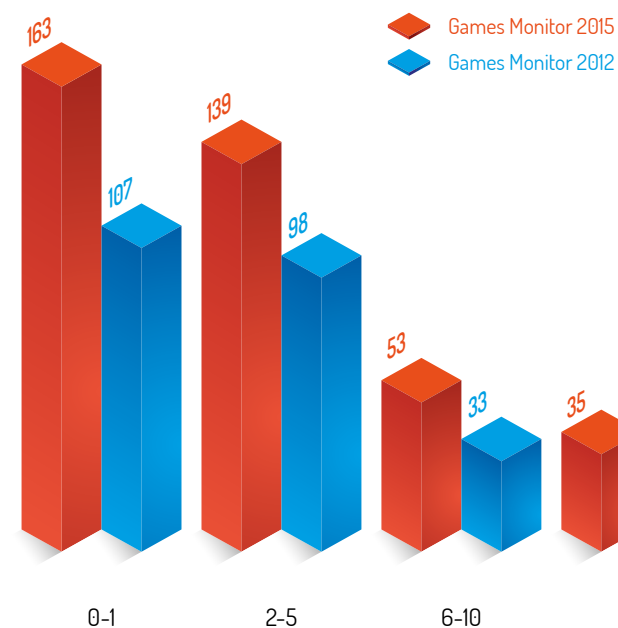Compared to the 2012 Games Monitor, the total number of game companies has increased. Entertainment game production has almost doubled to a total of 160, taking over applied gaming's previous dominant position (see Figure 1.2). The number of companies in the applied games industry also grew to a total of 119, as did companies specialized in asset development (arts, music and audio). From an international perspective, applied games still have a strong foothold in the Dutch games industry (see chapter 6).
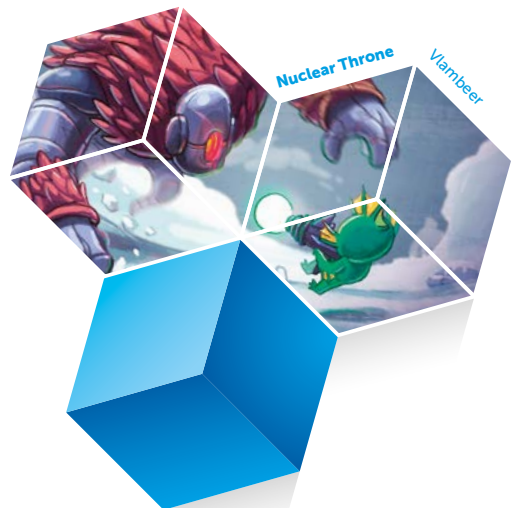
Figure 1.2: Number of game developers by specialization in 2011 and 2015, based on number of companies
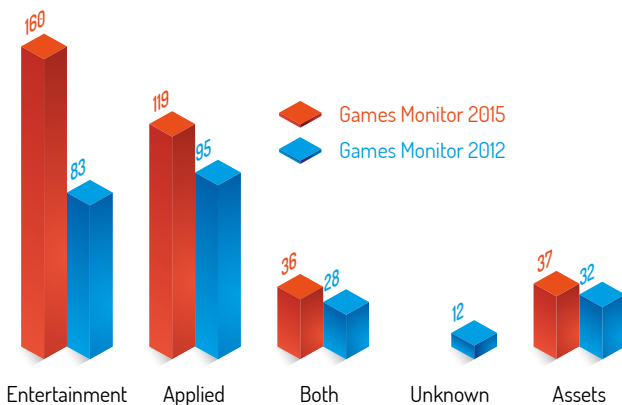
Source: TNO/NEO Observatory, data from CONTROL/Dutch Game Garden/LISA

Games Monitor 2015
Games Monitor 2012

Category	2015	2012
Entertainment	160	83
Applied	119	95
Both	36	28
Unknown		12
Assets	37	32

SIZE OF COMPANIES

The average size of a company in the games industry is still relatively small: about 7 employees on average, compared to 9 in 2012. This can be explained by the change in the structure of the games industry (caused by the increase in start-ups) in the Netherlands and by the large reorganization of Spil Games, the second largest game company of the Netherlands.

The highest growth took place in game development which consists of relatively small-scale companies. The number of small companies in the games industry is rapidly increasing. Similar to the creative industry as a whole, the game industry has many start-ups and small firms. The number of freelancers and self-employed entrepreneurs without employees is relatively limited compared to other creative industries. The Dutch game industry has substantially more jobs in medium and large sized firms, between 11 and 50 employees. The share of jobs in companies with less than 10 employees is modest (around 30 %). The games industry with a diverse skillset including both creativity and technology positions the games industry in-between the creative industries and ICT. This is also reflected in company size (Immovator 2014). [1]

Figure 1.3: Growth of number of companies by firm size in 2011-2015

1. Immovator (2014), Monitor Creatieve Industrie 2014, Stichting Immovator Netwerk.

Games Monitor 2015
Games Monitor 2012

Firm size	2015	2012
0-1	163	107
2-5	139	98
6-10	53	33
11-25	35	36
26-50	22	11
51-100	5	5
101-249	3	4

Source: TNO/NEO Observatory, data from CONTROL/Dutch Game Garden/LISA

This impressive growth of small scaled companies indicates that start-ups have gained a dominant position in the industry.

> **THE NUMBER OF GAME COMPANIES WITH MORE THAN 10 EMPLOYEES HAS ALSO INCREASED FROM 56 IN 2011 TO 65 IN 2015.**

Although research tracking the growth of individual game companies over a longer period of time is needed, this is an indication that scale-up activities are taking place in the games industry.

REGIONAL HIGHLIGHTS

Amsterdam's game industry is the largest, just short of 800 jobs divided over 89 game companies. *Guerrilla Games*, by far the largest game company in the Netherlands is located in Amsterdam. Other large game companies in Amsterdam are *Vanguard Games, Orange Games, Perfect World Europe* and *IJsfontein*.

Rotterdam is the second largest city, providing 275 jobs. Since the Games Monitor 2012, Rotterdam has surpassed Utrecht and Hilversum in the ranking, as a result of the growth in applied gaming. Examples of applied game companies in Rotterdam are *DPDK, Ranj* and *VSTEP*.

Utrecht ranks third and remains the hub for many small game companies (65!), mainly focusing on entertainment games and indie games.

The Hague (*Gamepoint*), Hilversum (*Spil Games)*, Den Bosch (*König Gaming*), Eindhoven (*GameHouse*) and Delft (*E-Semble*) follow in the ranking.

In Hilversum, the number of game company employees decreased dramatically due to the personnel reduction of Spil Games which still remains the second largest game company in the Netherlands.

Groningen shows a remarkable growth due to the foundation of game development hub IndieTopia.

Age of Wonders III

Thriumph Studios

Figure 1.4: Number of jobs in the games industry by city: for the top 9 cities, 2015

GRONINGEN
101 JOBS

AMSTERDAM
787 JOBS

HILVERSUM
217 JOBS

THE HAGUE
224 JOBS

DELFT
104 JOBS

ROTTERDAM
273 JOBS

UTRECHT
262 JOBS

DEN BOSCH
156 JOBS

EINDHOVEN
112 JOBS

Game Developer – Entertainment

Game Developer – Applied

Game Developer – Both

Game Developer – Assets

Game Developer / Publisher

Publisher

Distributor

Technology Supplier

Service Provider

Increase number of jobs

Decrease number of jobs

Unchanged number of jobs
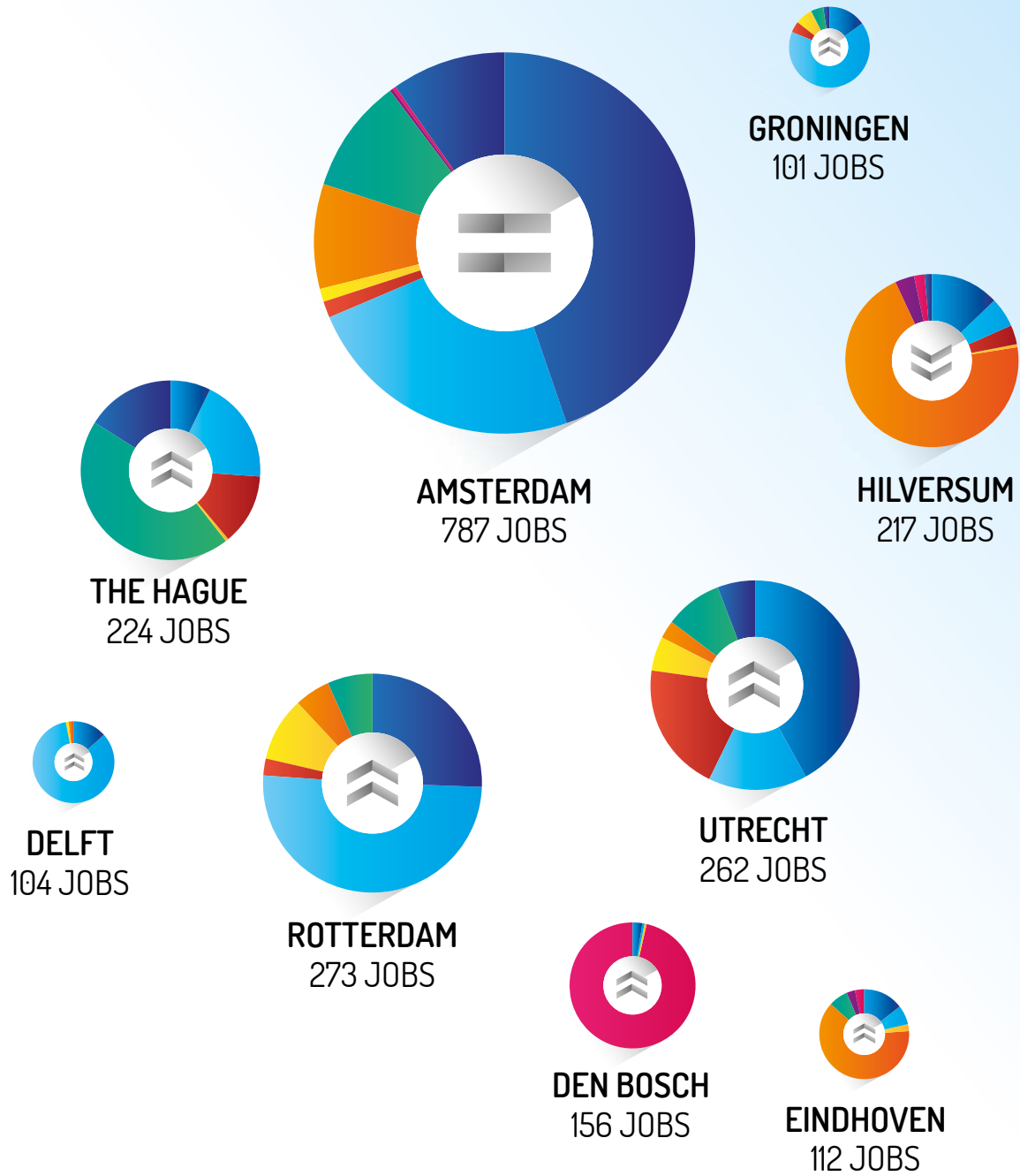
2. APPLIED GAME STUDIOS

This chapter focuses on the facts and figures and challenges for applied game studios. First, we will look at the key figures for applied game studios. Applied games are an important aspect of the Dutch games industry. This segment of the market faces some specific challenges to become a sustainable economic sector. In this chapter we examine a few of these challenges and trends in more depth.
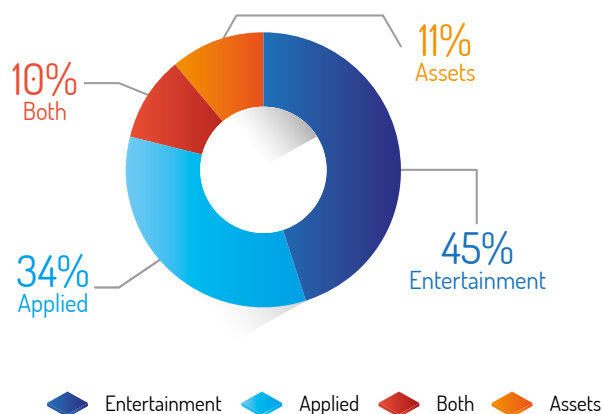
2.1 Key figures for applied game studios

Applied games remain an important pillar of the Dutch game industry. The total number of applied developers grew by 28% to 158 companies. Almost half (44%) of all Dutch game development companies are involved in applied games [1].

Figure 2.1: Jobs and companies in applied vs entertainment games

Applied vs Entertainment (Jobs)

8% Both
5% Assets
41% Applied
46% Entertainment
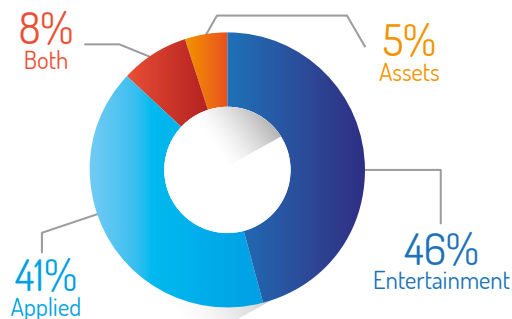
Applied vs Entertainment (Companies)

11% Assets
10% Both
34% Applied
45% Entertainment

Entertainment   Applied   Both   Assets

Looking at the number of companies, the market share for applied games decreased from 56% in 2012 to the aforementioned 44% in 2015. Making applied games seems to be less popular among the large number of new game development companies. Survey results show that for companies younger than ten years, only 17% focus solely on applied games, while over 50% focus solely on entertainment games. The percentages are divided more equally for companies older than 10 years. There are no hard turnover or profit data available for applied games in the Netherlands specifically. Factoring in the low turnover of most starting developers, it can be assumed that the economic impact of applied studios has risen more than that of its entertainment counterparts.

All of the relatively large dedicated applied game companies surveyed in 2012, are still active in 2015: *Grendel Games, Little Chicken, IJsfontein, Silverfit, Ranj (now: &ranj), VSTEP, E-semble (now: XVR), Qlvr and MAD Multimedia.*

During the 2011 – 2015 period, the market has not been as calm as figures may suggest. Most applied game studios indicated a sharp decline in clients in 2013 and particularly in 2014. The magnitude of this decline was so severe that the continuity of some dedicated applied games studios was threatened. Some of these companies scaled down, leading to layoffs.

In 2015 the number of tender requests began rising sharply. Some of the companies indicated having more interested clients than they could take on. Considering the recent past, some of them chose not to increase their workforce in order to address this increasing demand. Instead, they opted to consolidate and minimize risks rather than increase profits (and risk).

It is important to note that measuring the exact number of clients for applied game studios falls beyond the scope of this research. Nonetheless, all of the applied studios indicated very similar trends in client development over the past few years.

Reports on numbers and percentages of applied game studios in other countries are sparse.

> FOREIGN SECTOR ORGANIZATION OFFICIALS HAVE REPEATEDLY STATED THEY ESTIMATE THE PERCENTAGE OF APPLIED GAME STUDIOS IN THEIR TERRITORY TO BE SIGNIFICANTLY LOWER THAN THE ALMOST 50% IN THE NETHERLANDS.

Comparative figures are not readily available, but it seems that the Dutch game industry is indeed unique in its substantial focus on applied games.

2.2 Trends and challenges for applied games

INTERNATIONAL DEVELOPMENTS
Expanding the customer base is one strategy for scaling up a business. This is not always easy for applied games because of the differences between countries in terms of, for example, health care systems and requirements for the use of new technologies.

Companies whose turnover depends less on projects for individual clients (i.e. companies developing their own IP) are more internationally orientated. In the survey, 42% of applied game companies reported that their turnover is fully realized in the Netherlands. Fifty-eight percent have international clients and turnover. Some of the larger applied game studios have opened international offices. Most notably, the simulation-oriented *XVR* and *VSTEP* have offices in Singapore and a worldwide network of partners and clients.

PARTNERING & FUNDING
One trend became particularly apparent among the larger applied game development studios in the past two years: partnering - in more ways than one.

Some examples:
- ◆ Four of the largest Dutch applied game companies started experimenting with shared marketing and promotion (calling themselves the G4 group);
- ◆ A Dutch hospital and a Dutch health insurance company acquired a minority stake in applied studio *Grendel Games* (2014);
- ◆ Consultancy agency &samhoud acquired a 50% stake in applied *studio RANJ* (2015);
- ◆ Several other applied game developers are actively searching for (financial) partners.

EMERGING SECTOR
The use of applied games is increasing, for example in the health sector. But for many potential clients, applied games are still an unknown territory. A lot of time and energy is being spent explaining the game use and development process. The sector faces some specific issues related to operating in an innovative field, a number of which increase the risk of operating a game studio. A few examples:

- **Client wishes**
  As applied games are new to most clients (as opposed to websites, corporate identities, etc.), it can be hard to clearly identify the client's wishes. The process of demand articulation takes some time, and often represents an upfront investment. Furthermore, the same inexperience with games can make it hard for studios to explain (and defend) budget proposals. This is an issue that will subside over time, as more clients integrate applied games into their operations.

- **Development time**
  Since most studios tackle projects on a case-by-case basis, it is difficult to accurately estimate development time and therefore the exact costs of a project. The potential for overrunning time or budget constraints is far greater for game projects than websites, for instance.

- **A luxury product**
  Even though games are becoming more popular in certain industries as recruitment or HR tools, they are still considered a luxury product. Most clients are aware of the added value of social media, corporate branding and marketing. However, games are viewed as a more time-consuming and risky proposition. Many clients are unaware of the development costs involved, and often think a game is (too) expensive. Embedding the game into the organization is also not taken into account.

VALIDATION

As the game industry matures and the application of games in other sectors grows, game companies are asked to prove that their products actually work. In some cases, validation requests go beyond the standards of a sector. For instance in the educational sector, educational tools are rarely validated or tested before use in educational settings. However game-based learning and the use of games in the classroom is generally only accepted if the games have been certified or validated via scientific means.

The healthcare sector is known for rigorous validation trials used for new drugs. Games that have been successful in this sector have gone through the same extensive and costly process of validation, while using other means of validation would facilitate the process, especially for games developed for awareness and prevention purposes. To prevent validation issues from hampering the growth of applied companies, they should be discussed on a governmental level to determine whether there is a way to alleviate some of the risks involved in validating applied games.

Existing methods for risk analysis of medical devices are not aligned with the increased use of apps, applied games and online e-health tools. There is a lack of transparency for end-users (consumers, patients, health professionals and health mediators and insurance companies) about the status, use and effectiveness of these new tools.
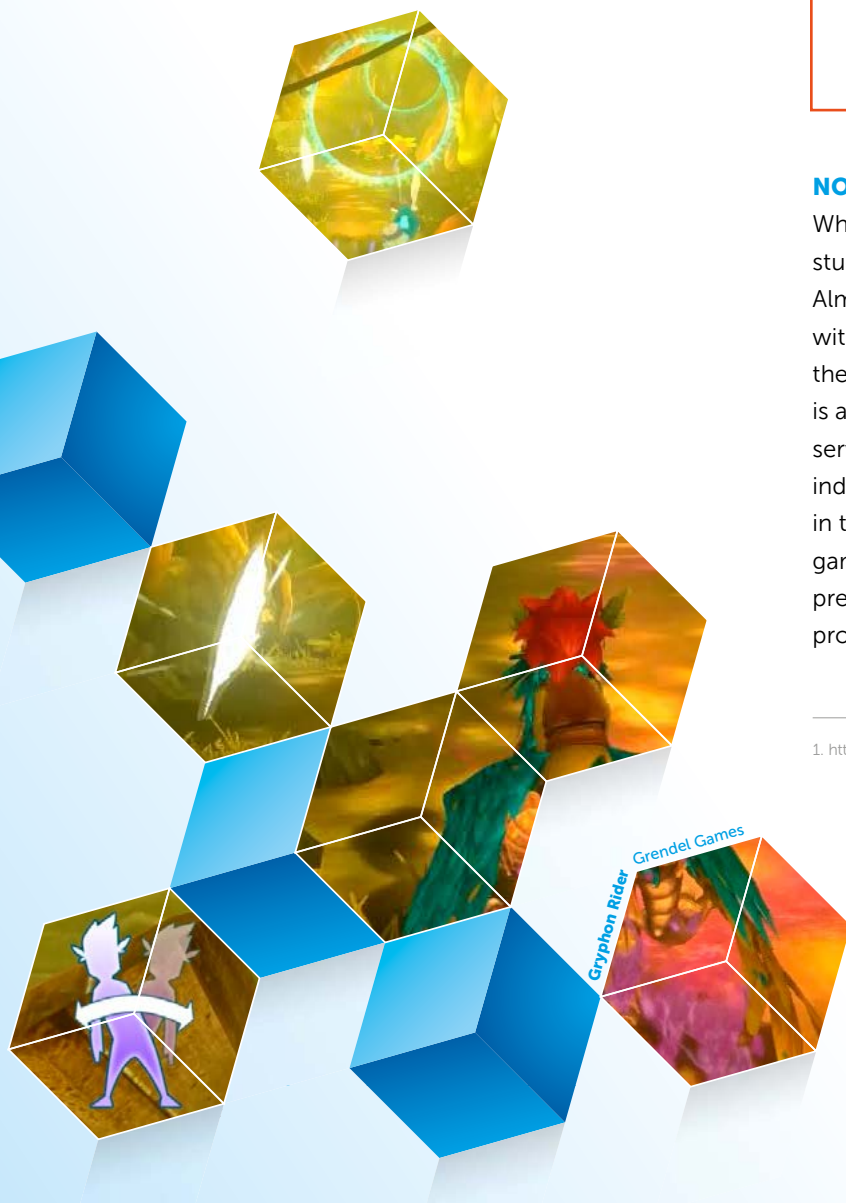
At the same time, existing efficacy and risk analysis frameworks often lead to quantitative long-term validation requirements that slow down the possible contribution to better and affordable healthcare for the patient. This also leads to barriers for new entrants and innovative ideas.

The Growing Games project[1] has therefore started an initiative to lobby for a better system of risk analysis and validation of health applications. The proposal includes validation during the iterative cycle of game design. A short as possible cycle and a more efficient validation process are necessary considering the fast developments both in technical platforms and devices and the applications on those devices (critical time-to-market cycle).

NO SPECIALIZATION

When asked about the type of clients applied game studios work for, results revealed almost no specialization. Almost all of the surveyed studios said they were working with clients from a range of sectors. Taking into account the size of their clients via weighted average, there hardly is a difference between the sectors game companies serve (see figure 2.2). Survey results (see figure 2.3) indicate that the main goals of applied games developed in the Netherlands by Dutch game studios are: applied game education, healthcare (training, treatment and prevention combined), closely followed by training of professionals, and awareness creation.
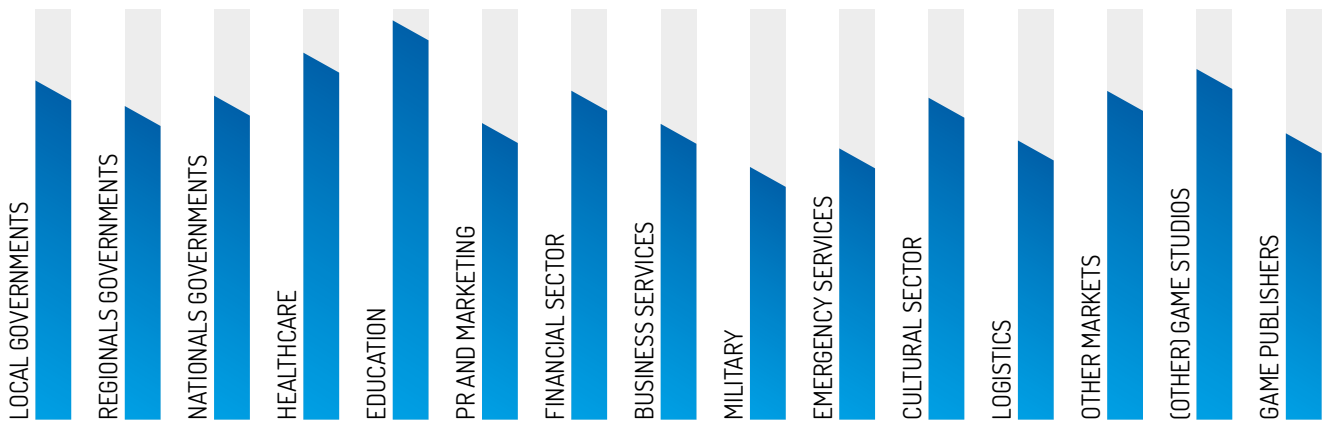
1. http://www.growinggames.nl/validatie-van-ehealth-applicaties-moet-sneller-en-beter/

Gryphon Rider Grendel Games

Figure 2.2: Applied game based on weighted average markets

Figure 2.3 (Goals of applied games):

Goal	Value
PUBLIC SPACE	13%
EDUCATION (SCHOOLING)	50%
MARKETING & PR	37%
RECRUITMENT	11%
TRAINING OF PROFESSIONALS (NOT HEALTH)	39%
AWARENESS (NOT HEALTH)	39%
HEALTHCARE: TRAINING OF PROFESSIONALS	15%
HEALTHCARE: TREATMENT	19%
HEALTHCARE: PREVENTION	19%
OTHER GOALS	24%

Figure 2.3: Goals of applied games

Figure 2.4 (Expected growth in applied game markets):

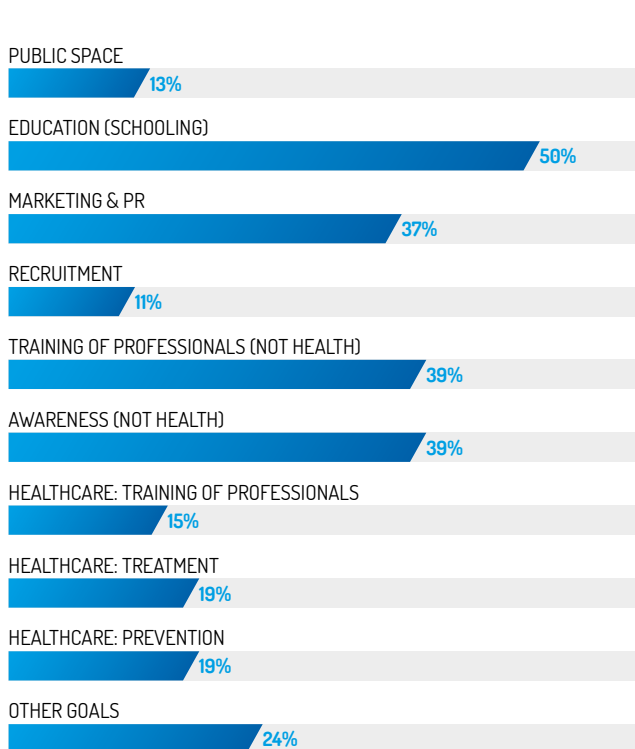| Market	Agree	Neutral	Disagree
BUSINESS SERVICES	32%	48%	20%
LOGISTICS	31%	54%	15%
CULTURAL SECTOR	44%	41%	15%
EMERGENCY SERVICES	44%	45%	12%
MILITARY	38%	49%	13%
FINANCIAL SECTOR	34%	49%	13%
MARKETING & PR	50%	40%	10%
EDUCATION	73%	20%	8%
HEALTHCARE	64%	29%	8%
GOVERNMENT	48%	45%	8%

Figure 2.4: Expected growth in applied game markets

No client specialization has the advantage of being able to take on more diverse clients, reducing risk of a decreasing client base. On the other hand, a lack of specialization makes it more difficult to aim a company's marketing goals and to really understand what is happening in a specific market. Growth for applied games is expected in several domains, most notably in healthcare and the educational sector.
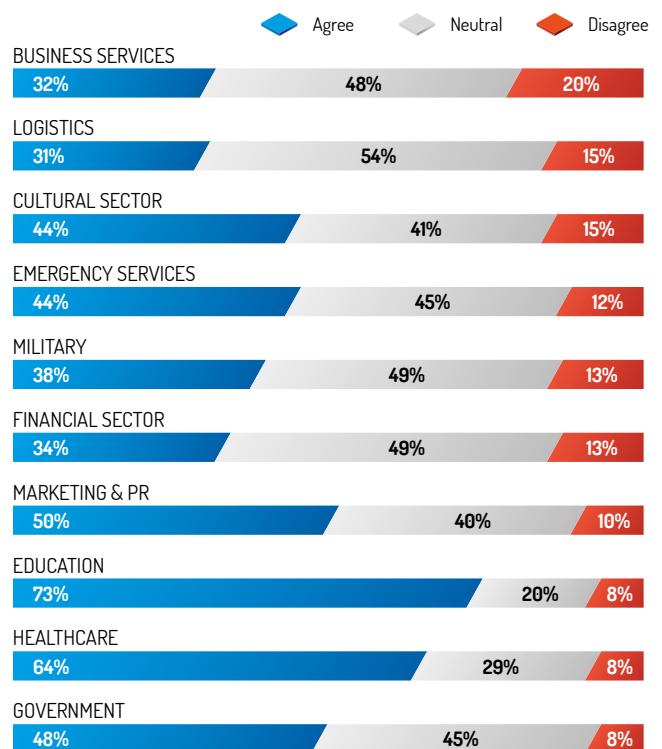
We do see some specialization in companies that have been particularly successful with one kind of client, especially in healthcare. However, this does not appear to be the norm among Dutch applied game studios.

2.3 Support

The government recognizes the applied game sector as a potential growth sector. We see governmental support on several levels, primarily due to the inclusion of (applied) games in the "Top Sector" policy. Programs such as ClickNL Games and Growing Games[2] have provided support for both applied and entertainment games, however they tend to focus more on the applied games sector.

We see a lot of support for scientific research on (primarily applied) games, with the Netherlands Organization for Scientific Research (NWO)[3] being responsible for the bulk of the research funding. The newly opened call for KIEM (Knowledge Innovation Mapping) is an interesting scheme to encourage and facilitate public-private partnerships in the creative industries.[4]

2.4 The future of applied games: From Contractor to Creator

Currently, most of the projects completed by applied game studios are driven by client demands. To scale up the applied games market, a more product-based approach, where companies develop games that are applicable and sellable to many clients, is necessary. This provides a need to move away from producing 'one-off' solutions for individual clients.

Being less depended on client assignments reduces the operating risk and potentially increases profits (due to a potentially much larger scale). Having successfully developed and deployed new intellectual property (IP) makes a studio far more attractive to investors.

We see some of the more successful and fast-growing applied game studios moving down that path.

Some examples:
- ◆ *Tygron, XVR* and *VSTEP* (can be considered applied game studios, although they market themselves primarily as simulation companies) all have their own solutions that are applicable for more than one client. They serve hundreds of clients in dozens of countries all over the world.
- ◆ *Grendel Games* may well be the best example of a traditional applied game studio turning into a much more IP oriented company. Primarily catering to the healthcare sector, it has developed games such as Underground, a training game and tool for surgeons, and Gryphon Rider, a game and tool for patients with balance issues, that are being sold to hospitals worldwide.
- ◆ Active Cues, founded by researchers and applied studio *Monobanda Digital*, developed 'ToverTafel' (MagicTable), which helps Alzheimer's patients. ToverTafel has been developed as new IP from the start and is being sold as a product. They are now broadening their market to include the mentally disabled and patients with autism.

During conversations with several of the larger applied studios, most of them expressed their desire to shift towards a more IP based company. Tomas Sala, co-founder of applied *studio Little Chicken,* delivered a speech on this subject during the 2015 Control Conference. He stated clearly the desire of his company to move forward this way and urged others to do the same.

To reduce the risk of developing new IP, which typically has to be pre-financed, some applied studios are currently searching for partners.
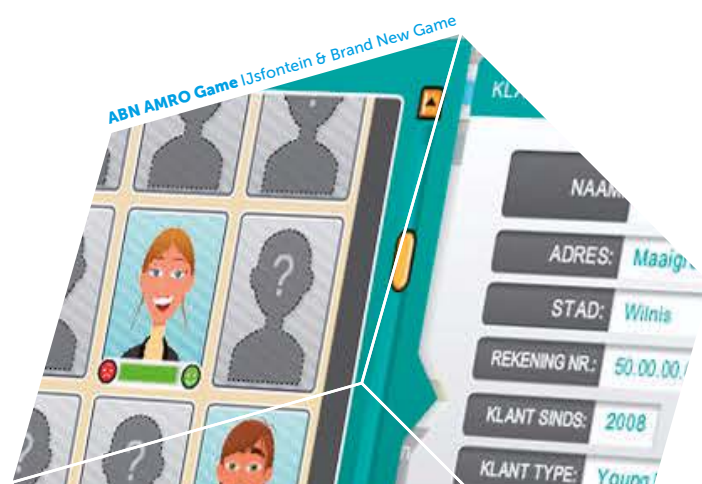
Overall, an acceleration of this trend among applied game studios is expected in the coming years. This is considered as one of the most important developments in the applied game sector for the near future.

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1. The results in this chapter are for companies that focus solely on applied games and companies that are active in both entertainment and applied game markets.
2. http://www.clicknl.nl/games/about/?lang=en; www.growinggames.nl
3. http://www.nwo.nl/en/funding/our-funding-instruments
4. http://www.nwo.nl/en/funding/our-funding-instruments/gw/creative-industry/creative-industry---knowledge-innovation-mapping-kiem/creative-industry---knowledge-innovation-mapping-kiem.html

3. ENTERTAINMENT GAME STUDIOS

The previous chapter focused on the facts and figures and challenges for applied game studios. In this chapter we focus on entertainment games. First, we will look at the key figures for entertainment game studios. Bear in mind that this chapter does not focus on the Dutch games industry as a whole, but only on entertainment game studios that are involved in the process of game development[1]. Entertainment game studios have their own challenges and trends, as the market and business models are very different compared to applied games. In this chapter, we highlight a few of these trends in detail. Some of these are specific for the Dutch industry. Others are a more global phenomenon.

3.1 Key figures entertainment game studios

When we compare the data from the 2012 Games Monitor to 2015, two findings are notable. First, there was a considerable growth in the number of entertainment game development studios, almost doubling from 83 to 160. Second, the increase in game development studios was not mirrored by a similar increase in the number of professionals working in entertainment. The number of jobs remained more or less the same as in the 2012 Games Monitor (approx. 860 fte).

So how do we explain these findings?

The answer lies in the rise of independent (or indie) game studios - small companies consisting of one to a maximum of five people, formed mostly by students during or right after graduation. Most of these studios produce games for mobile platforms (iOS, Android, Windows Phone). Fresh out of college or university and often still living with their parents, these new professionals survive on a shoestring budget.

> THEIR BIGGEST INVESTMENT IS THE TIME THEY SPEND ON THE DEVELOPMENT OF THEIR GAME.

3.2 Trends and challenges for entertainment games

CHANGING MARKETS AND BUSINESS MODELS
The market for entertainment games has shifted considerably over the last three years. The rise of smart phones around seven years ago with the introduction of the iPhone created opportunities for small teams to score big with relatively small and cheap games. This situation has changed. It has become much harder to realize large profits in this market. Visibility and marketing require a much greater effort. With few exceptions, small games from small teams no longer rake in (the big) money. However, the survey shows that almost half of the young studios focus on this particular market segment.

Recent years showed a transition to the PC-platform Steam. In 2015, forty four percent of respondents developed games for this platform. Initially, this platform offered great opportunities, but the popularity of Steam is making it increasingly difficult to be successful there.

Free to Play dominates the mobile market. Mid-sized games (built by mostly mid-sized and experienced teams) dominate the PC marketplace and games with high production values dominate the console market. The increment of new studios is seldom in one of these segments. Start-up studios need to realign their business model to follow developments in the market in order to be successful.

SIZE MATTERS

Guerrilla Games is the largest game company in the Netherlands with over 200 employees. Its workforce is constantly expanding to meet the demand of shipping their new game on time. Following the successful release of the original Killzone on PlayStation 2 in 2004, Guerilla went on to create several award-winning sequels and spin-offs. They are now working on brand-new IP scheduled for a 2016 release.

Medium-sized entertainment studios are shifting their scope and way of working. A few examples are *Triumph Studios*, which was forced to scale down a few years ago, but with the production of Age of Wonders III nearing completion, it added personnel to ensure quality and be able to deliver on time. *Paladin Studios* is growing rapidly to meet the demand of their Japanese clients. *Ronimo Games* has a team of 20 and continues to succeed on the market with Awesomenauts and Swords and Soldiers. *Engine Software, Abstraction Games* and *Nixxes* are all mid-sized studios with a successful track record. They work for hire and port games to various platforms.

Successful smaller teams have similar strategies to tackle demand by temporarily hiring freelancers, outsourcing some of the work, or forming partnerships. *Vlambeer*, whose latest title is Nuclear Throne, build games with the help of freelancers. *M2H* and *Blackmill Games* are two studios that work together on the successful Steam game Verdun. They also hire freelancers and work for hire studios.

In conclusion, it seems that in order to be successful and keep up with the demands of the users and publishers, larger teams are necessary. Over the past few years, successful studios have tended to be relatively large (11 to 25 people) and have more than five years' experience. There were some exceptions in 2015: small independent game studio *Lucky Cat Studios* scored a major hit with Nom Cat and independent developer *Noio* was very successful with Kingdom.

SUCCESS! NOW TRY TO REPEAT IT!

Another point of concern is the hit-driven nature of the games business. It is hard to score a hit, and once a studio has one, it is difficult to capitalize on this.

For instance, *Abbey Games* - a young entertainment studio - scored a major hit with their Steam debut game REUS in May 2013. They invested the profits in upscaling the studio and developing new IP. Their new game Renowned Explorers was released in September 2015 and was not an instant success. Abbey could not capitalize on the 800,000 player base they had with REUS. However, sales are continuing to steadily increase[2].

Other studios like the above-mentioned *Guerilla Games, Ronimo Games* and *Triumph Studios* have managed to score successive hits with sequels and new IP. Maximizing IP both in sequels and merchandising is a strategy for repeated success.

Horizon Zero Dawn — Guerrilla Games

SENIORITY AND EXPERIENCE

New entertainment studios mainly consist of first-time entrepreneurs. These studios have limited experience as game developers and hardly any knowledge about how to effectively run a business. No seniority in a start-up team often means poor planning, and as such projects run late and are more expensive. In a recent survey[3] Control found 80% of respondents had underestimated the development time of their latest games, often by more than 100 to 200%.

Senior developers have a bigger chance of starting a successful company, but this group does not start new studios in the Netherlands. Senior developers already have employment or move abroad for better work opportunities.

New studios struggle to remain afloat. Based on the survey and additional data from sources like SteamSpy (which monitors sales of games on Steam), we can conclude that, compared to other more established studios,

> THE MAJORITY OF START-UPS HAVE A SMALL TURNOVER AND MAKE LITTLE TO NO PROFIT.

More on turnover and profit can be found in chapter 5.

For instance, two entertainment game studios with promising reviews and innovative ideas were forced to bow out due to lack of revenue after the launch of their games. *Vogelsap*, founded in as a student company in 2013, first released their game The Flock in August 2015. *Monogon Games*, founded in 2012, first released their game Interloper in May 2015.

Despite enjoying a lot of positive pre-launch coverage, Vogelsap's asymmetrical multiplayer shooter The Flock failed at launch. Creative Director and Game Designer Jeroen Van Hasselt analyzed the launch and what went wrong during a frank and honest talk at Control Conference 2015.[4] The expectations for the game far exceeded the reality. There was a mismatch between price (too high) and available content. During launch, there were a lot of bugs leading to several negative reviews shortly after the launch. The longevity of the game was short because it was too repetitive. This led to just 3000 copies sold in the first two months and not enough players to keep the game going.[5] Several campaigns around major holidays and alterations in for example price did not boost sales. As a result, the studio did not earn any profit and was forced to close down.
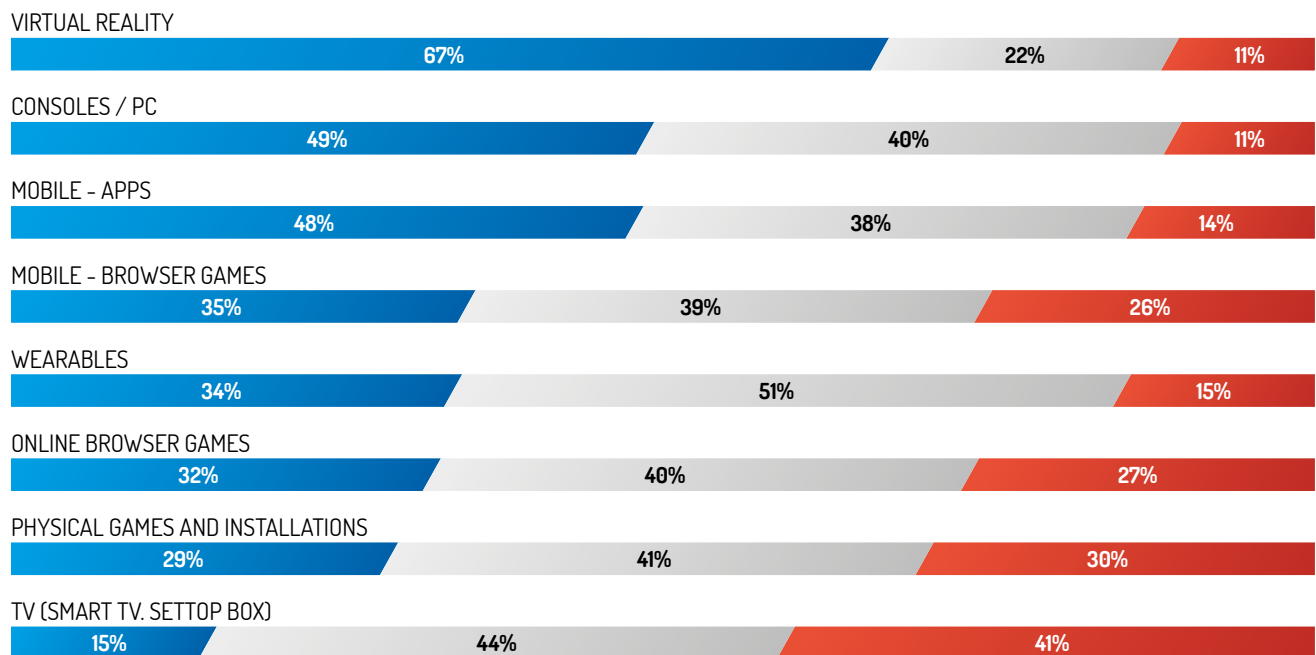
Figure 3.1: Expected growth

	Agree	Neutral	Disagree
VIRTUAL REALITY	67%	22%	11%
CONSOLES / PC	49%	40%	11%
MOBILE - APPS	48%	38%	14%
MOBILE - BROWSER GAMES	35%	39%	26%
WEARABLES	34%	51%	15%
ONLINE BROWSER GAMES	32%	40%	27%
PHYSICAL GAMES AND INSTALLATIONS	29%	41%	30%
TV (SMART TV. SETTOP BOX)	15%	44%	41%

Platforms for entertainment games keep changing with new technical developments leading to new chances for games. When asked about expected growth on various platforms, Dutch game companies were most positive about the chances for Virtual Reality. For instance several developers have been experimenting with games for Oculus Rift. As the device will be commercially available in 2016 a growth in games specifically designed for VR is to be expected.

Almost half of the respondents were positive about the developments both in consoles and pc as well as in mobile apps. For wearables it seems that more people are still trying to see which way the wind blows with over fifty percent of people rating this device as neutral. Respondents are least positive about the chances for TV.

3.3 Support

Unlike the applied games sector, entertainment games get minimal (financial) support from government and other organizations. The entertainment sector of the games industry does not have a strong representation with the government. There is no serious lobby for a more substantial funding like filmmakers in the Netherlands have access to. More importantly there is no talk of tax benefits for game developers like there are in surrounding countries such as Belgium, France and the UK.

There are, however, (partly government funded) incubators like the Dutch Game Garden and clusters of game companies (e.g. Indietopia) that actively support the growth and development of entertainment games and teams. Gamefund grants support development of artistic games.

1. See table 1: only the category game developer is taken into account, this leads to a number of 352 companies. The term studios is often used for game development companies, to make this distinction clear the term 'studio' is used in the chapter instead of the more general term 'company'.
2. Steamspy early January 2016 shows that around 45,000 copies have been sold, with 10,000 new players added during the holiday period.
3. http://control-online.nl/gamesindustrie/2015/07/15/cijfers-geopenbaard-kosten-en-opbrengsten-van-11-nederlandse-games/
4. http://80.lv/articles/why-the-flock-failed-creative-director-tells-all/
5. http://ctrl500.com/business/33-on-metacritic-why-my-game-failed/

3.4 The future of entertainment games: scaling up

Success is not guaranteed in an ever-changing industry with a myriad of business models, increasing numbers of platforms and tech engines and shifting user demands. Competition remains fierce, making it even more difficult for talented, young, small studios to find their niche in the market and continue to grow after their initial launch. Dutch entertainment game studios are moderately successful at the moment. Big hits are few and far in between. Specifically, new studios lack a dedicated business and/or marketing expertise that can help successfully identify market demands and launch a product in that segment.

Studios have been able to learn from the successes and failures of others due to a close-knit network and open and transparent community. There is a new-found willingness to share profit margins and losses, which increases awareness and the sense of urgency. The era of small studios being able to live off of small games produced for mobile platforms has ended. The main recommendation after analyzing the data is for Dutch studios to scale up. The answer to the demands of increased quality lies in the formation of bigger teams. When individual studio growth is not possible or desirable, cooperation or even mergers may be the answer. When scaling up, studios also have to look at possibilities to capitalize on successful IP and keep a close watch on market developments.

4. GAME EDUCATION IN THE NETHERLANDS

DEVELOPMENT

As depicted in the map, Dutch knowledge institutions offer a notable number of game studies. In comparison to the Games Monitor 2012, the number of full-time game studies has increased by 25% from 35 to 44. Next to dedicated game studies, many knowledge institutions also offer a range of gaming minors and single courses to their students. These minors and courses are part of different studies such as Communication and Media Design, Computer Science or Technical studies. Courses at private schools such as Qantm are included in this number, online courses (MOOC) are not included. The total number of game related minors and courses has increased significantly from 9 in 2012 to 22 in 2015.

OUTFLOW OF STUDENTS

The annual outflow of all game students is approximately 1600. Of this number of alumni, 991 students graduate from a full-time study (both secondary and higher vocational education and universities), and 648 students completed either a game minor or a game course.

Yet program coordinators from secondary vocational education note that roughly 70% of the full-time students will continue their education at Universities of Applied Science (higher vocational education). Therefore the exact outflow of full-time game students is actually 733 instead of the initial 991.

Looking at the ratio between game artist education and game development education (+-60/40) the outflow of game artist students is slighty higher in comparison to the outflow of game development students.

INCREASE IN NUMBER OF GAME STUDENTS

The number of game studies has increased, but some of them haven't delivered many alumni yet. Therefore the outflow of students is likely to increase in the coming years. Many program coordinators note that their gaming classes are expected to increase in size, which means more students and a higher number of yearly outflow of game students.

Table 4.1: Overview of types and numbers of knoweldge institutes providing Game Education

Game education by knowledge institution	Full-time: Majors and Masters	Part-time: Minors and courses	Total
Research University	5	11	16
University of Applied Science	17	11	28
Vocational education	22	-	22
Total	**44**	**22**	**66**

Table 4.2: Estimated outflow of game students by knowledge institute

Estimated outflow of game students by knowledge institution	Full-time: Majors and Masters	Part-time: Minors and courses	Total
Research University	189	257	446
University of Applied Science	433	391	824
Vocational education	369	-	369
Total	**991**	**648**	**1639**
Exact outflow* game students	**733**	**-**	**-**

* Exact outflow: outflow is calculated by extracting 70% of the students from vocational education who will continue their education at Universities of Applied Science

Legend:
- [1] Number of studies
- Fulltime
- Minor / Course
- Research university
- University of applied science
- Vocational Education

Map labels:
- [3] LEEUWARDEN
- [6] GRONINGEN
- [2] DRACHTEN
- [3] ZWOLLE
- AMSTERDAM
- [9]
- [5] ENSCHEDE
- [1] LEIDEN
- [4] HILVERSUM
- [1] EDE
- [2] DEN HAAG
- [8] UTRECHT
- [1] ARNHEM
- [3] DELFT
- [5] ROTTERDAM
- [5] BREDA
- [2] ROOSENDAAL
- [2] TILBURG
- [3] EINDHOVEN
- [1] MAASTRICHT

ALUMNI

Although program coordinators emphasize the importance of alumni data, many educational institutions admit they are not surveying their alumni students on a structural basis. At the moment only a few educational institutions monitor their alumni by linking the former students to their LinkedIn accounts.

The analysis shows that roughly 30% of the full-time alumni are working in the gaming industry (according to the core definition used in the Games Monitor). Another 50% of the alumni work in the creative industries (media companies, advertising industry etc.). The remaining 20% of the full-time alumni have found a job outside the creative industries (software companies, healthcare etc.).

SELECTION

Game education has become more popular over the years, as program coordinators notice an increasing interest in game major/masters as well as game minors/ courses. Do educational institutions apply any selection criteria for game studies? Some educational institution such as HKU University of the Arts Utrecht and NHTV Breda University of Applied Sciences, apply a strict selection procedure for their future students. This selection procedure consists of several assignments.

For master students a game-related bachelor/minor is often required. Secondary vocational education institutions are by law not allowed to apply a numerus fixus policy. However, some program coordinators have mentioned that a light selection procedure is applied. Interested candidates are asked to write a motivation letter and carry out an assignment. Candidates are then given a positive or negative appraisal which can help them decide whether the course matches their expectations.

QUALITY AND QUANTITY

During the round table meetings with industry experts the topic 'Game education' has been widely discussed. Perspectives and discussions about education are varied. The quality of game education has been disputed. A mismatch between industry needs and educational levels has been addressed. Certain game companies find that there is a knowledge gap between education and the industry. Some game studios are experiencing difficulties finding qualified interns/employees and therefore are forced to look abroad. The number of available internships is also an issue for some schools and they actively search for available places abroad or outside the core of the games industry.

Other industry experts emphazise that the quality of game students varies highly between institutions. Most experts agree that a business-oriented course should be added to game majors/masters. More knowledge on entrepreneurship is needed. Another recommendation is to encourage interdisciplinary courses between students with different backgrounds (i.e. business but also potential fields of application).

Secondly, besides quality of game education, the quantity of game students has been a topic of discussion. As mentioned above, the amount of game-related courses and educational insititutions specializing in game studies has substantially increased in the Netherlands. It is likely to grow in the near future, whilst the number of jobs in the game industry is not increasing at an equal rate. With hundreds of students flooding the games market in the coming years, this is a real point of concern.

> TALENTS ARE IMMEDIATELY PICKED UP
> BY GUERRILLA GAMES OR LEAVE
> FOR ANOTHER AAA DEVELOPER ABROAD.

Some of the talents consciously choose to be entrepreneurs. More game alumni are forced to look for alternative jobs. Some experts say this is not necessarily a problem as these future alumni are likely to find other jobs in related sectors (creative industries, ICT or even potential fields of application for games). Others however argue that the number of students accepted in game education should be more regulated.

Type of education and skillset was not discussed. It would be useful to gather opinions concerning the type of skill-sets lacking. Acquiring an entrepreneurial mind-set is highlighted as a must along with the option to match more business savvy members with creatives. Creating a culture where the added value of business and sales is fundamental to have a chance to succeed in the industry, along with being aware of the ever-changing business models and the need for a marketing strategy.

Antegods Codeglue
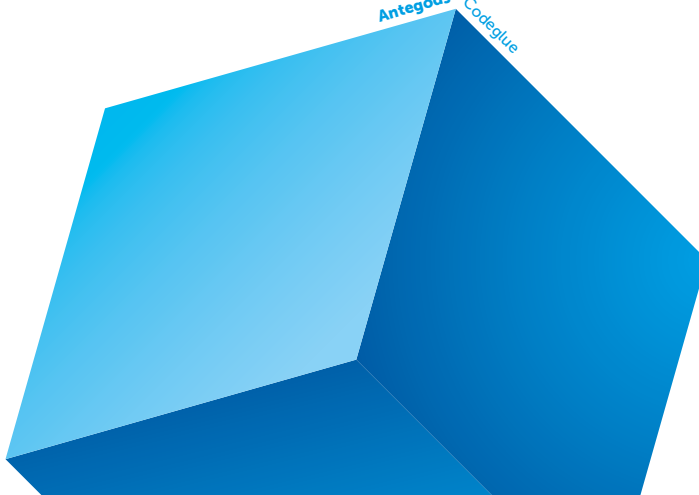
5. GROWTH: THE CONSTANT CHALLENGE

In discussions about the state of the Dutch Games industry, growth and sustainability of the sector are above all being debated. After the initial presentation on the preliminary results of the Games Monitor 2015, several discussions were organized. Three roundtable discussions and the greater part of a meeting from the Dutch Games Association were reserved to discuss the findings of the survey. The sessions focused on three broad themes: Growth, Finance and Education. Industry experts, game developers and game educators were invited to share their insights. Education is covered in a separate chapter. This chapter aims to provide a more in depth view of growth and finance.

GROWTH

The games industry is a dynamic sector with many start-ups and companies involved in both the entertainment and applied industry. However, to achieve more sustainable growth, scaling up is necessary. The main findings are that more than half of the companies have an annual turnover lower than 100,000 Euros and about 15% are unable to make a profit. Only 9% of companies has a profit margin of more than 500,000 Euros *(see figure 5.1)*.
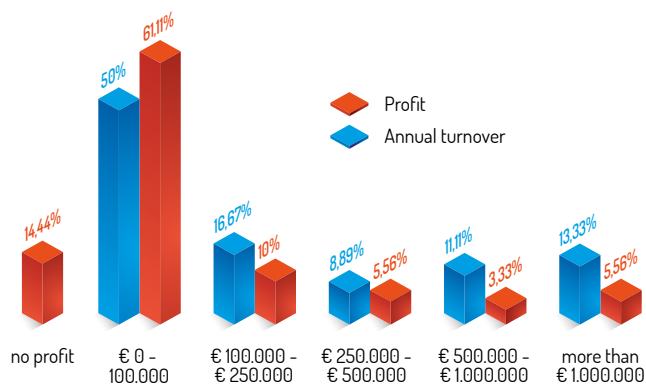

Figure 5.1: Annual turnover and profit

Companies are young (more than half are less than 5 years old) and relatively small (average number of employees is 7).

The majority (over 80%) of Dutch game companies are interested in growth by: existing markets, accessing new markets, or by cooperating with other companies via acquisition, sales and marketing. These paths to growth are almost equally distributed.
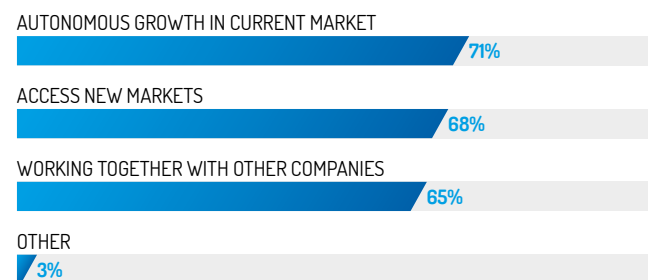

AUTONOMOUS GROWTH IN CURRENT MARKET — 71%
ACCESS NEW MARKETS — 68%
WORKING TOGETHER WITH OTHER COMPANIES — 65%
OTHER — 3%

Figure 5.2: Aspired growth via access to market and access to skills

When asked about current challenges and how these are perceived, game companies rated the top three challenges as: access to funding, availability of qualified staff, and sales. Thus access to finance, access to market, and access to knowledge are top priorities. There seems to be a mismatch between ambition to grow and available funds; more than 40% report issues in obtaining funds.

> IT IS ALSO STRIKING THAT 20% ACKNOWLEDGE THEY DO NOT HAVE ALL THE NECESSARY ENTREPRENEURIAL SKILLS TO ACHIEVE GROWTH AVAILABLE WITHIN THEIR COMPANY.
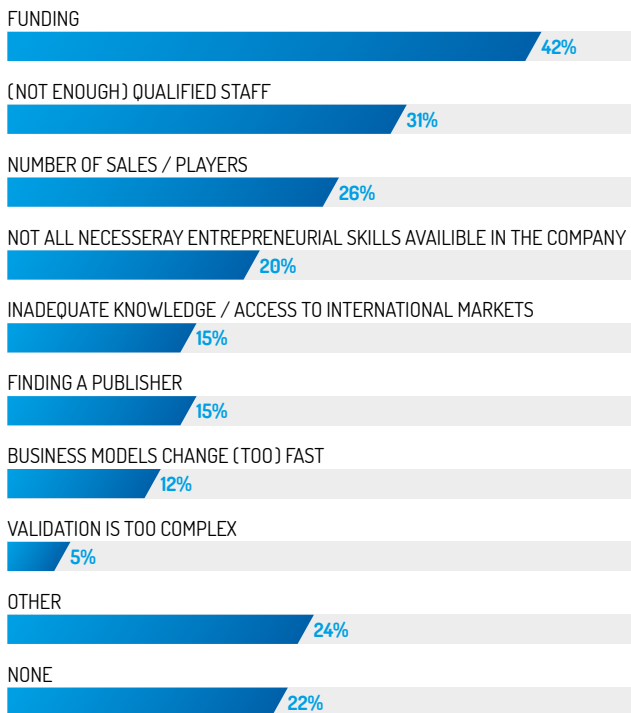
FUNDING
42%

(NOT ENOUGH) QUALIFIED STAFF
31%

NUMBER OF SALES / PLAYERS
26%

NOT ALL NECESSERAY ENTREPRENEURIAL SKILLS AVAILIBLE IN THE COMPANY
20%

INADEQUATE KNOWLEDGE / ACCESS TO INTERNATIONAL MARKETS
15%

FINDING A PUBLISHER
15%

BUSINESS MODELS CHANGE (TOO) FAST
12%

VALIDATION IS TOO COMPLEX
5%

OTHER
24%

NONE
22%

Figure 5.3: Perceived challenges in growth

Roundtable discussions mentioned that new companies choose to remain small and are hesitant to scale up due to the apparent risks involved. Using their already established networks and partnerships to collaborate is more common. Networks often are established during education and by participating in events. The sector has grown in terms of partnerships and networks; more than one-third of the companies indicate that hiring freelancers has grown in the past three years.

Growth, even though apparent, is not as high as expected. Sustainability and scalability are points of concern. Bridging the gap between small studios and small and medium enterprises (SMEs), remains a point of concern in this disruptive market. Managing expectations combined with a healthy sense of realism are traits that should be fostered. The wish to create unique and creative games should not diminish the importance of business acumen and an entrepreneurial mind-set.

FINANCE

As mentioned above, access to finance is a main challenge for the games industry. There has been more provision of funds via government initiatives such as: Gamefonds *(http://stimuleringsfonds.nl/en/grants/game_fund/)* and ClickNL Games *(http://www.clicknl.nl/games/?lang=en)* aimed at increasing innovation via cooperation between research, industry and the government.

However results from the survey indicate that the most common path to finance for start-ups is via own means. This is not surprising as start-ups generally partly fund their growth by their own means. Taking into account the low profits of most companies though, the available resources are not very large. Venture capital, crowdfunding and grant funding are also seen as potential sources for funding. One's own network and loans via the bank are used the least. The number of companies who see a bank loan as a possible way to finance their growth has diminished the past years (from 21% to a meagre 7%). This is of course due to banks tightening up the rules for loans because of the economic crisis.
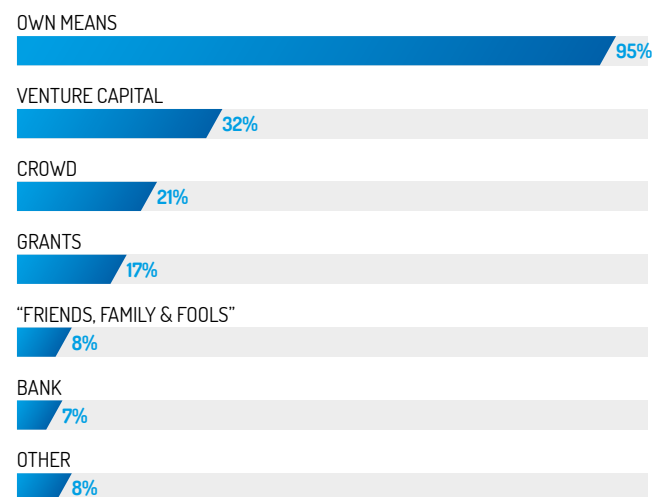
OWN MEANS
95%

VENTURE CAPITAL
32%

CROWD
21%

GRANTS
17%

"FRIENDS, FAMILY & FOOLS"
8%

BANK
7%

OTHER
8%

Figure 5.4: Type of funding perceived by game companies

Roundtable discussions second these results. There is a need for investment and funds up to 100,000 Euros. This is hard to obtain as investors are used to investing large sums of money and still find games a risky bet. How to overcome the 'Valley of death' is an obstacle for all start-ups. "The problem is that professional investors (angels and venture capital) want a proven business model before

they invest, ready to scale, rather than the more risky research and development efforts" [1]. Broadening the value chain to integrate publishers in the finance model is one option to overcome this challenge.

Another challenge is to bridge the gap between game companies and potential investors. In general, game companies are not used to the idea of giving up control or Intellectual Property and have never thought about a potential exit strategy for an investor. Companies who have overcome these hurdles and have received funding are for example Stolen Couch Games and Vanguard Games.

Applied game companies have a better chance of acquiring funds due to the complexity, more specific scope of the subject matter, and their cross-over nature. However, investors are reluctant to invest when games have not been validated. Another challenge is to break through existing financing methods in these fields of application. For example, in the educational sector publishers of educational materials often revert to standardized and easy to use products which fit more with their traditional business models. Bringing games into the equation leads to questions of how to maintain software systems or how to create a community of users. Educational publishers are also used to working with royalty fees and not in investing upfront, which is the financing model game companies are
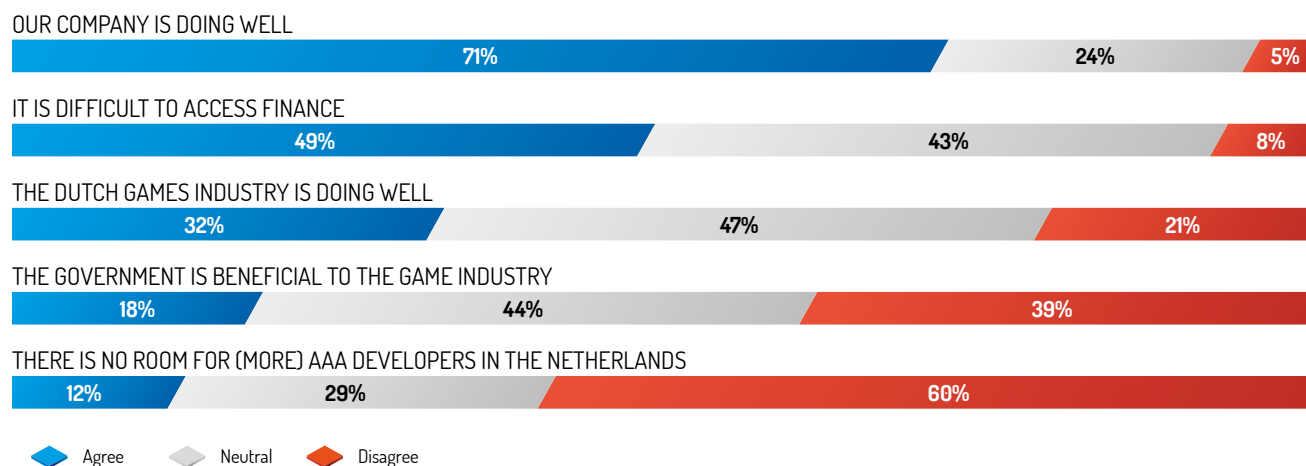
looking for. Publishers are interested in innovation and the possibilities of games, however the means of collaboration are still to be determined.

Crowdfunding was also mentioned as an alternative funding route. As seen in figure 5.4, crowdfunding is the third highest way of acquiring finance: the number of interested companies has risen in the past three years (from 13% to 21%). A quick scan of crowdfunding via Kickstarter [2] shows that during 2013- 2015, seven Dutch game companies were successful in their Kickstarter project, raising between 4,000 Euros to 345,000 Euros.[3]

Crowdfunding is a good start, however it is not necessarily a foolproof way to fund fully playable games. Game companies are now looking at ways of funding parts of their game in order to reduce risk and create a balance between the energy needed to initiate a Kickstarter and the risk of not reaching the target.

Even though growth has been less than expected. It is noteworthy to mention that the majority of game companies feel that they are doing well, compared to less than half of the respondents who indicate that the games industry as a whole is doing well. Finance was seen as a hurdle for around half of the companies and room for growth in terms of triple A companies was optimistic.

Figure 5.5: Overall perception of the games industry by game companies

OUR COMPANY IS DOING WELL

| 71% | 24% | 5% |

IT IS DIFFICULT TO ACCESS FINANCE

| 49% | 43% | 8% |

THE DUTCH GAMES INDUSTRY IS DOING WELL

| 32% | 47% | 21% |

THE GOVERNMENT IS BENEFICIAL TO THE GAME INDUSTRY

| 18% | 44% | 39% |

THERE IS NO ROOM FOR (MORE) AAA DEVELOPERS IN THE NETHERLANDS

| 12% | 29% | 60% |

◆ Agree   ◆ Neutral   ◆ Disagree

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1.   http://www.forbes.com/sites/martinzwilling/2013/02/18/10-ways-for-startups-to-survive-the-valley-of-death/

2.   Game companies in the Netherlands also have alternate routes of crowdsourcing such as indiegogo (www.indiegogo.com), a few companies have used the Symbid platform. Figures for tve are unavailable.

3.   The scan was carried out on 29th of December, 2015 using the search filter 'Netherlands' and 'games'. Card and board games were excluded. Student initiatives (often not successful) were also left out. The successful projects are: Awesomenauts Starstorm, Ortus Arena, Zenzizenzic, Convoy, Herald,, Dimension Drive and Catamancer.

The Dutch Games Industry at a glance
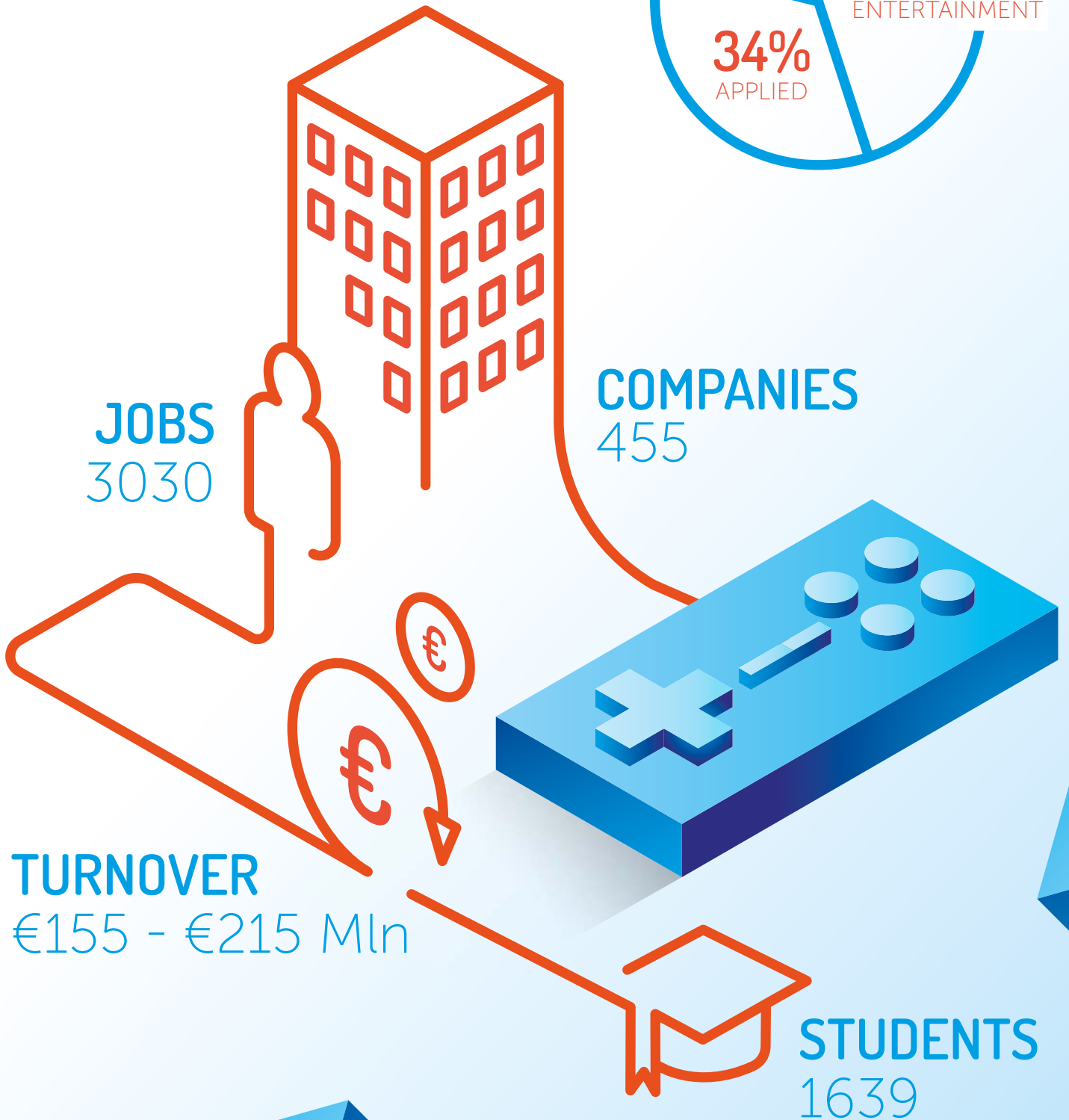
10%
BOTH

11%
ASSETS
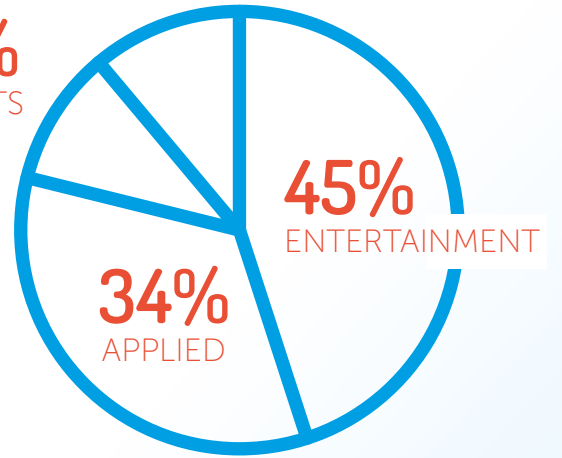
45%
ENTERTAINMENT

34%
APPLIED

JOBS
3030

COMPANIES
455

TURNOVER
€155 - €215 Mln

STUDENTS
1639

6. EUROPEAN COMPARISON

We have researched a lot of international data and reports on the game industry in several European countries[1]. First of all, it takes some effort to come up with figures that are fair to compare. We've compiled a table which should provide a good comparison between several countries.

However, we feel it's more important to actually look at the written statements in the reports, rather than stop at the numbers. These statements reveal very interesting and relevant information. For instance, the fact a large majority of game companies is young, small and making no profit is a European trend, not just a Dutch one.

MANY SIMILARITIES BETWEEN MOST EUROPEAN COUNTRIES CAN BE SEEN:

◆ The games industry consists mainly of micro (<10 FTE) and small (<50 FTE) companies

◆ Basically all of them report that percentage to be above 80-85%

◆ A huge uptake is seen in iOS focused developers between 2010 and 2013

◆ Strong growth in new studios: at least half of game development studios are younger than 5 years

◆ At least half of game development studios have a turnover of <100k euro

◆ There is a Top 10 or Top 20 of large and commercially successful studios

◆ These 10 to 20 studios are responsible for at least 50, and in some cases up to 80% of the entire workforce

SIMILARITIES BETWEEN SOME EUROPEAN COUNTRIES:

◆ Focus by entire industry example: Germany now claims to be world leader in developing and publishing browser based games, acknowledging only one studio had a real breakthrough in AAA development (Crytek), Polish game industry seems to focus on console and desktop-releases

◆ Too few game students / qualified personnel (reported in UK, Germany, Poland and Nordics)

DIFFERENCE BETWEEN THE NETHERLANDS AND MOST OTHER EUROPEAN COUNTRIES:

◆ Heavy focus on applied games (almost 50%)

◆ Lack of top 20 or top 10 of large and successful studios

◆ Significantly smaller turnover per employee (63k, depending on used method, European average is somewhere between 150 and 200k, Sweden and Finland approximately 400k euro)

◆ Many game students

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1. SOURCES: Nesta (2013), BUI (2013), Spanish Association for the Game and Entertainment Software Development and Publishing Industry (2013), Game Developer Index Sweden (2015), Baromètre du jeu vidéo en France (2015), Interactive Denmark (ID), EGDF, Neogames Report Finland (2015), The State Of The Polish Video Game Sector - Report 2015, EGDF reports, Newzoo (2015), Control, TNO/CBS/LISA

Beyond Eyes *Tiger & Squid*

Table 6.1 International comparison main facts and figures about the games industry

Country	Game Companies	Game Dev Studios	Jobs	Turnover	Year	Source
Netherlands	455	**352**	3030	190	**2015**	**Games Monitor 2015**
United Kingdom	**1.902**	–	10870	1490	**2013**	**Nesta (2013)**
Germany	–	**320**	10350	1820	**2013**	**BUI (2013)**
Romania	65	–	**5000**	–	**2015**	**Newzoo (2015)**
Spain	**330**	260	3380	**313**	2013	**Spanish Association for the Game and Entertainment Software Development and Publishing Industry (2013)**
Sweden	–	**213**	3117	952	**2015**	**Game Developer Index 2015, Swedish Games Industry's**
France	**600**	–	3000	–	**2015**	**Baromètre du jeu vidéo en France – 2015**
Finland	–	**260**	2500	800	2014	**Neogames Report Finland (2015)**
Czech Republic	125	–	850	–	–	–
Austria	120	–	750	–	–	–
Denmark	**190**	171	**735**	148	2014	**Interactive Denmark (ID)**
Belgium	29	–	200	41	–	–
Poland	**150**	–	–	–	**2015**	**The state of the polish video game sector (2015)**
US	–	–	42000	3700	2012	**ESA – USA 2014 report (data from 2012)**
Canada	–	**472**	20400	2800	**2015**	**Entertainment Software Association of Canada (ESAC)**

Not Bold = EGDF   **Bold = Source**
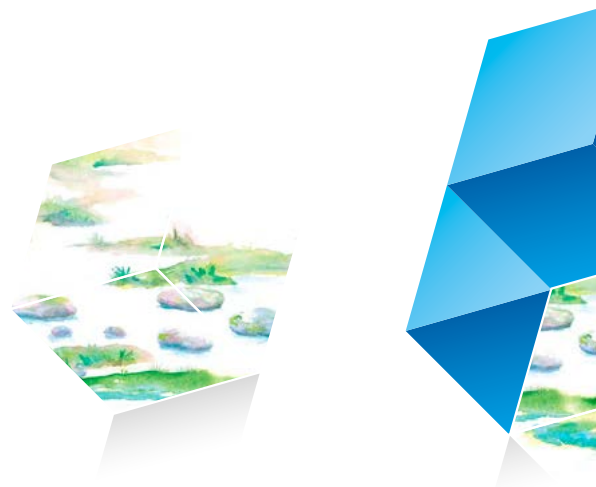
7. INTERNATIONAL COMPARISON - POLAND

In this chapter we take a look at the games industry in Poland [1]. A few years ago the Netherlands and Poland had a very similar industry in terms of size and makeup. Now we see that Polish developers have managed to take the next big step towards international success.

HISTORY

The professional Polish games industry started after the fall of communism in the beginning of the 1990's. Before that time there were almost no professional developers and distributors. Movies, music and games were pirated and sold in street-side markets. No-one bothered about copyright infringements.

That is where some of the oldest Polish game publishers got their start. Techland, now one of Poland's largest development studios and publishers, was founded in 1991 as a computer software distributor. Founder Paweł Marchewka got his start by distributing illegally copied games. He has now continued the business with legal software. The same is true for CD Projekt Red, the most well-known Polish developer. Founded in 1994 by Marcin Iwinski and Michal Kicinski, they were selling cracked and localized Western games on CDs in a Warsaw market place.

CD Projekt Red first rise to (national) fame came by localizing PC game Baldur's Gate from Bioware. They spent an unprecedented amount of money hiring famous Polish actors and filling the box with extra content in the form of a soundtrack, map and a localized booklet. The game was a huge success. When they started working on the sequel, their international partner Interplay went bankrupt. This was the moment they decided to start developing games themselves. The Witcher, a fantasy novel of Polish writer Andrzej Sapkowski was on top of the list. It took 5 years to create the game but it was a success in 2007.

The first international success for a Polish game however came from People Can Fly with Painkiller in 2004.

An important moment in the development of the Polish games industry is the period after the release of The Witcher 1. The company started work on a console version of the game, The Witcher: Rise of the White Wolf, at the request of its worldwide publisher, Atari. It outsourced this project to France, and the resulting mess nearly brought CD Projekt Red to its knees. As a result the company was left in financial turmoil and had to lay off staff.

In hindsight, that wasn't actually a bad thing. It turned out to be the starting point of a more diverse industry with several studios instead of just a couple of mighty studios that absorbed all talent. Many new studios formed in that period, like 11 Bit Studios, sprang up to sit alongside CD Projekt Red and other more established companies like Techland, Epic Games Poland (now People Can Fly), and CI Games.

The last two years saw a number of high profile, multi-million seller games from Poland. The Witcher 3: Wild Hunt - CD Projekt Red (6 million copies), Dying Light - Techland (5 million copies), This War of Mine - 11 Bit Studios (1 million copies), Lords of the Fallen (1 million copies) and Sniper: Ghost Warrior 2 - CI Games (2 million copies).

FINANCE

CI Games was the first game studio listed at the Warsaw Stock Exchange since 2007. CD Projekt Red is also part of that financial market, having joined the Warsaw Stock Exchange in 2008 when it acquired a failing Polish computer company, Optimus, in a reverse takeover. This move enabled CD Projekt to expand.

Thanks to progressive securities and exchange laws you can buy shares in indie developers as well. The Warsaw Stock Exchange, the largest in Central Europe, features a parallel market called NewConnect. There, investors can purchase shares in small companies like 11 Bit Studios, maker of This War of Mine.

> THE POLISH GAME INDUSTRY WAS WORTH AN ESTIMATED **$279.6 MILLION** IN 2014. THERE WERE CA. **150 GAME STUDIOS** IN POLAND, EMPLOYING AROUND **2,000 PEOPLE**.

Those numbers are likely to be much higher now. The last 12 months alone saw highly successful releases like The Witcher 3, This War of Mine and Dying Light.

ANALYSIS

Studios in Poland are mostly independent, so they are not owned or financed by another company. That means that there is always the pressure of making money and scoring a hit game. Both Techland and CD Projekt Red also localize and distribute other games, which serves as a good financial base for the company.

Employees grow up in that culture of securing finances and scoring hits to survive. So for example when CD Projekt Red had to lay off staff, new companies sprung up, headed by senior developers that had a sense of how to properly set up and run a studio. As we mentioned, it turned out to be a positive event for the Polish industry, a more diverse industry developed as a result. The fact that in the Netherlands Guerrilla Games in comparison is such a stable studio (thanks to mother company Sony), may also lead to few senior developers feeling the need (or even being forced) to start a new game studio in the Netherlands, leaving the formation of new studios to inexperienced young developers. Securing financial support through stock markets seems like a great way for even smaller companies to access funds.

Poland, as a former communist country, used to be very focused on Russia. When communism fell in the early 90's, borders opened up and a new world (and market) along with it (the West). But the enormous Russian (and former Soviet Union countries) markets were not forgotten, effectively creating a much broader user base than Western countries that mostly focus on Europe and the USA.

GOVERNMENT SUPPORT

In the last few years the Polish embassy, in cooperation with the Ministry of the Economy, has begun to lead missions to places like the Game Developers Conference in San Francisco, E3 in Los Angeles and the Tokyo Game Show in an effort to broaden the market for Polish games.

The government support for the Polish games market goes all the way to the top. During an official state visit in 2011, the prime minister of Poland gifted US President Barack Obama a copy of The Witcher 2.

Polish developers are not yet convinced of the govern-ment's commitment to the Polish games industry. Grzegorz Miechowski, managing director of 11 Bit Studios, says that they are still waiting for the first results: "The government didn't play a role in the growth of the Polish industry."

1. SOURCES: Venturebeat, Indiegame Polska, Digital Dragons, Kotaku and others

EDUCATION

The last years saw the number of schools in Poland providing GameDev education surge. According to Polish developers, game education is mostly focused on programming. There are hardly any courses for game art and game design. Below is a list of educational institutions where game-related courses are available:

- ◆ University of Warsaw
- ◆ The University of Silesia in Katowice, teaching video game programming
- ◆ The Jagiellonian University in Krakow, offering GameDev as a 2nd degree specialization of the Informatics major
- ◆ AGH University of Science and Technology in Krakow
- ◆ The School of Humanities and Journalism in Poznan, offering Game Design as a path in Informatics
- ◆ Lodz University of Technology, teaching graphic and game design
- ◆ Poznan University of Technology
- ◆ Warsaw University of Technology
- ◆ Gdansk University of Technology

COMPANIES

There are an estimated 150 game companies in Poland. These are the most well-known:

- ◆ Techland 1991 (distributor), 2000 (developer)
- ◆ CD Projekt Red 1994 (distributor), 2002 (developer)
- ◆ People Can Fly 2002 (developer)
- ◆ CI Games 2002 (developer/publisher)
- ◆ The Astronauts
- ◆ 11 Bit Studios
- ◆ The Farm 51

http://indiegamespolska.com/polish-gamedev

8. APPENDIX – DATA AND METHODOLOGY

The Appendix provides you with a description of the methodology used to obtain the results. Below is an explanation of the methodology concerning: selection criteria for included game companies, employment and turnover data, and number of game students and educational programs.

8.1 Selection criteria game companies

The total amount of game companies was determined by updating the Games Monitor 2012 database. It was update by adding new (start-up) companies via Control and Dutch Game Garden networks and deleting companies who are not active in the games industry anymore. A more in depth selection was carried out by including companies from other sources (newspaper articles, google, startupdelta.org, fs6.com). All companies have been cross-referenced with data from the Chamber of Commerce and verified by Control, NEO Observatory/TNO and Dutch Game Garden.

The selection criteria are based on the following definition of the games industry:

All companies whose core activities include at least one of the following processes in the value chain: the development, production, publication, facilitation and/or electronic distribution of electronic games.

Based on the selection process the Netherlands has a total of 455 game companies. The tabulation of companies was closed on July 1st 2015. Changes in game companies after this date who have started or ended their business or increased their personnel are not included in the data.

The selection criteria led to the exclusion of the following:
- the development and publication of physical and analog games such as board and card games.
- Companies whose core activity is not game development. A company is defined as a game company if a significant part (at least one third) of its turnover and/or strategic focus is provided by the development, production, publication, facilitation and/or distribution of electronic games.
- Parties involved in applied gaming such as clients, educational institutions and research institutions. Clients can range from advertising agencies and the Ministry of Defense to several public authorities and training agencies. For these companies, gaming is not a core activity but a secondary activity that strengthens their core activity. They often employ people, sometimes even a department, that is primarily occupied with applied gaming. On a company scale however, it is an in-house and/or ad hoc activity. Therefore, these companies have been excluded from the core definition of the games industry.
- Public authorities and governments, and educational institutions do operate in the gaming industry ecosystem, but have not been included in the core definition of the games industry.
- For the distribution of electronic (digital) games, retail is explicitly left out of the core definition.
- Online gambling is not considered an electronic (digital) game.

8.2 Employment

Employment figures concerning game companies are based on two main sources: the LISA register of employment and the Games Monitor 2015 Survey. LISA is the most comprehensive national database including information about Dutch companies and branches who employ personnel. The database includes information such as location (address) and socio-economic data (employment by type of economic activity) of companies.

We have used the latest available data from the LISA register of May 2015. Some game companies (13 in total) have separate entities and/or more than one location in the LISA register. These entities are all counted as separate game companies and have been included in the total tally. This has led to the addition of 20 companies to the list.

The games industry is a highly dynamic industry with many starters, companies that terminate activities and changes in number of employees. The LISA database is not always up-to-date and is missing completely for 192 game companies.

The 2015 Games Monitor Survey, company websites and the Games Monitor 2012 allowed us to triangulate the results and obtain the previously missing employment information. After adding information from these sources employment data was lacking for a total of 72 game companies. For these companies, an extra check with sources from Control and DGG and follow-up calls to some large companies led to additional information. For the remaining 35 companies an estimate was based on the average number of people working in a game company of the same category (between 0 and 5 employees).

8.3 Turnover

The turnover of game companies is estimated based upon the employment information and data of turnover per employee from CBS National Accounts of similar industries (IT, Advertising agencies, publishing, wholesale and design).

The Games Monitor survey was also used to verify the results. Due to the limited information from game companies and the high heterogeneity in turnover and profits per company, we have decided to publish the results on turnover in a range.

8.4 Game Education

Two types of data collection methods have been used: desk research and a semi-structured survey.

An initial inventory of the total number and characteristics of game programs in the Netherlands was conducted. Results were gathered by combining the previous information from the Games Monitor 2012 with additional desk research conducted by Dutch Game Garden and Economic Board Utrecht.

Secondly, (new) data has been obtained via a short semi-structured survey with program coordinators and (head) lecturers of the selected game programs. A total of 42 program coordinators/lecturers from 36 different knowledge institutions were contacted by email and/or phone. In-depth information regarding game education was derived from three roundtable discussions with industry experts.

RESEARCH LIMITATIONS
Although all 42 respondents were able to elaborate on basic programs features such as outflow of students and course specifics, only a few program coordinators/lecturers were able to give detailed information about their alumni. Many knowledge institutions do not actively monitor alumni. Therefore statements regarding alumni are solely based on the outcomes of the interviews. This preliminary analysis of alumni indicates that further research on (game) alumni is recommended.

I DON'T NEED TO "GET A LIFE" I'M A GAMER, I HAVE LOTS OF LIVES!