EUROPE'S VIDEO GAMES INDUSTRY

ISFE Response to the Consultation on the White Paper on Artificial Intelligence - A European Approach

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Introduction

1. *ISFE welcomes the opportunity to contribute to the European Commission Consultation on the White Paper on Artificial Intelligence – A European Approach. The video game sector plays an important role in research and development of Artificial intelligence (AI), and AI is used in innovative and creative ways by the industry to create new compelling experiences for players. Also, the simulated world of video games constitutes a researcher-friendly environment, as video games are seen as rich and complex, but controllable environments allowing to provide important feedback to the researcher, in particular on how to collect the data to further refine research in this area. ISFE's contribution focuses on sections 1 and 2 of the consultation.*

About ISFE

2. *ISFE represents the video games industry in Europe and is based in Brussels, Belgium. Our membership comprises national trade associations in 18 countries across Europe which represent in turn thousands of developers and publishers at national level. ISFE also has as direct members the leading European and international video game companies, many of which have studios with a strong European footprint, that produce and publish interactive entertainment and educational software for use on personal computers, game consoles, portable devices, mobile phones and tablets.*

3. *ISFE's purpose is to serve Europe's video games ecosystem by ensuring the value of games are widely understood and to promote growth, skills, and innovation policies that are vital to strengthen the video games sector's contribution to Europe's digital future. The video games sector represents one of Europe's most compelling economic success stories, relying on a strong IP framework, and is a rapidly growing segment of the creative industries. In 2019, the size of Europe's video games industry was €21 billion in revenues and registered a growth rate of 55% over the past 5 years in European key markets [1]. Video games have a proven ability to*

[1] ISFE Key Facts 2020 from GameTrack Data by Ipsos MORI and commissioned by ISFE https://www.isfe.eu/isfe-key-facts/ (to be updated in June).

successfully drive new business models. The digital transformation with the growth of online and app-based gaming represents today 76% of the industry's total European revenue. Via the emergence of on-demand and streaming services and the launch of new high-performance consoles, together with the strong growth of mobile gaming, the industry offers players across Europe and in all age groups the possibility to enjoy and engage with video games[2]. Today 51% of Europe's population plays videogames, which is approximately 250 million people, and 45 % of the players are women.

The video game industry's role in the development and use of AI

4. *Video game companies play an important role in research and development of AI, and AI is used in innovative and creative ways by the industry to create compelling new experiences for players. DeepMind is using Atari games as a primary test case for their deep learning research, and they are also partnering with Activision Blizzard to build AI for Starcraft II[3]. OpenAI, the non-profit artificial intelligence company chaired by Elon Musk and Y-Combinator founder Sam Altman, uses Open AI software in the UK developed game Grand Theft Auto V to help to develop an appropriate algorithm for autonomous vehicles to recognise stop signs. This is an example where the simulated world of video games constitutes a research-friendly environment. Video games are seen as rich and complex, but controllable environments allowing for the provision of important feedback to the research, in particular on how to collect the data to further refine research in this area.*

5. *Big data and AI are being adapted at a rapid pace to suit the video game industry's needs and have the potential to take the video games sector to the next level. Data is fundamental for the development and creation of new video game content and play an essential role in ensuring quality and frictionless gaming experiences that meet players' expectations. Gameplay data allow companies to detect software errors, bugs and fraudulent behaviour by the players. By collectively analysing players' data, a video game company can identify if there is a large problem being experienced by a majority of the players and learn how such "bottlenecks" need to be fixed. Analysis of gameplay data also helps match players based on non-precise location and skill in order to set up multiplayer game sessions and ensure the most competitive gaming experience for the player.*

6. *The possibilities of applying AI techniques to video games are many, such as improved matchmaking, voice and emotion synthesis, and graphics rendering. Below are a few examples of how AI is being researched and used within the video gaming community:*

    a. *<u>Content creation:</u> Many so called Triple-A video games, which are video games with a considerable development budget and a long development and production phase, rely on large open worlds to provide exciting spaces for players to explore. Creating such large levels and worlds is resource intensive when crafted completely by hand. For example, leveraging large data sets of real-world LIDAR mapped terrain to help AI learn how to automatically create realistic and interesting terrain is an area for further research and*

[2] See also https://www.isfe.eu/data-key-facts/

[3] https://www.lesechos.fr/intelligence-artificielle/veille-technologique/0600580215960-intelligence-artificielle-deepmind-terrasse-les-humains-a-starcraft-ii-2239486.php

developments. The results could give artists and level designers a head start on creating the large, realistic worlds that players enjoy.

b. *Improving animation quality: Video game companies often use motion and facial capture to put an actor's performance into the game. Now that hundreds of games have been made with these techniques, video game companies are experimenting with machine learning on the large volume of performance capture data collected over the years. Some studios experiment with neural networks trained on such data sets, to help create more realistic animations within games, giving a lifelike quality to its character animations.*

c. *Making games more fun: AI can help designers find the right level of challenge for a game. Tracking the data behind how the very best players engage with games can provide machine learning insights into how automated computer players canmake the game more challenging and engaging, without being overly difficult. Using machine learning personal player data can improve its AI performance and provide strategy recommendations to its players on what options to next pursue within a game. It can also be used to learn and mimic how the average player would approach the game, allowing designers, on mobile games for example, to more rapidly playtest than before and focus on their creative work. Analysis of gameplay data also helps match players based on non-precise location and skill in order to set up multiplayer game sessions and ensure the most competitive gaming experience for the player.*

d. *Improving digital and player safety: Online game environments are comprised of many, many players. Protecting the safety of these players is a foundational concern for game platforms and publishers. Increasingly AI techniques are being applied to this space to complement the role of human moderators. This is to protect users of game platforms against profane and other damaging content to which they might be exposed unwittingly. Many video game companies use a web-based moderation and legal-escalation system for reactive moderation. A human moderator checks reports raised by players, reviews the evidence to see if there has been a breach of the terms of service and use and decides whether to allow or remove the content. Inside this system many companies also leverage functionality, in limited cases, which automatically applies a previously recorded human decision if the same content is reported again e.g. 6 months later. However, this tool has a safeguard which prompts a subsequent human moderator review if there are multiple further grief reports about previously actioned content, so protecting against potentially unsound primary decisions. Additionally, many video game companies also use advanced word filtering and URL filtering tools to block damaging content. These are automated but dynamic systems which are constantly under review by human moderators and subjected to categorisation changes. For example, Project Artemis[4] is a new tool that can aid in detection of attempted child grooming. It reviews historical text-based chat conversations to evaluate and "rate" conversation characteristics and assign an overall probability rating. This rating can be used by implementing companies to determine when a conversation should be flagged and sent for review by human moderators, who can take appropriate action.*

[4] Microsoft Shares New Technique to Address Online Grooming of Children for Sexual Purposes, https://blogs.microsoft.com/on-the-issues/2020/01/09/artemis-online-grooming-detection/.

e. *Improving integrity in play by combatting cheating, fraud and abuse: A small segment of players attempt to use cheats and exploits within games to get an advantage within the video games communities. Increasingly AI is used to detect when a player might be cheating and to make recommendations to human administrators on whether or not a player's activity should be investigated further[5]. Video game companies are developing AI to detect patterns of transactions consistent with fraudulent behaviour. For example, a player could employ market manipulation and third party trading sites to gain not only an unfair advantage, but financial benefits as well.*

f. *Improving player support: Like all products, players sometimes call up support when something goes wrong within a game. Collecting data on these calls with their correlated resolutions provides a rich data set that AI can leverage to provide insights to improve player support[6].*

g. *Quality assurance optimisation: Video game companies are looking at using AI to make their quality assurance processes in game development more efficient, improving the game play experience as well as helping to keep games affordable.[7]*

Section 1. The building of an ecosystem of excellence that can support the development and uptake of AI across the EU economy and public administration

ISFE's response focuses on the various actions proposed in the White Paper that are of particular importance for the video games sector, their alignment with policy and strengthened coordination.

7. *To maintain and to further strengthen Europe's innovation capital,* ***investment in skills is a crucial point.*** *The games industry often requires very specialised, niche skillsets which drastically narrow the candidate pool. Recruiting people who can provide the level of expertise and technical talent required in the games industry can therefore be difficult. The annual members survey of UKIE[8], the national trade association in the UK, revealed that 56% of respondents were struggling to fill their listed vacancies due to a low number of candidates with relevant skills while 18% stated it was due to a low number of candidates in general. This means that 74% of the participating video game companies reported difficulties in finding skilled staff compared to the EU average for businesses which is 40% declaring difficulties in*

[5] For example, Microsoft is looking at using AI and machine learning capabilities to detect cheating in video games by isolating outliers in player progress data, rankings, etc., to determine whether or not a player should be flagged for unfair play.

[6] For example, EA's Worldwide Customer Experience player support division has experimented with using AI to classify player issues to prioritize support efforts and help players resolve their technical issues faster.

[7] For example, SIE is looking at using AI for automatic glitch detection in both video and audio, gameplay bug detection (e.g. where players become stuck due to non-passable terrain etc) and for Technical Requirements Checklist ('TRC') compliance which is a procedure used at the end of a game's development cycle to ensure that the software works correctly within the constraints of each platform provider.

[8] https://ukie.org.uk/news/2019/10/key-findings-ukie-member-survey-2019

finding ICT specialists[9]. Results from the Polish "Gamedev 2017" study[10] which surveyed more than 100 companies between December 2016 and March 2017 confirm this trend. While 93% of the companies indicated that the skillset is the key determining factor in choosing a new team member, only 10% were satisfied with graduates' competences. 37% of respondents found the educational level poor or very poor.

8. *A more **fundamental transformation of the education and training systems** is needed to ensure that the workforce acquire the necessary knowledge, skills and competences to fill positions that continuously evolve and change. Importantly computational skills must be part of fundamental skills rather than part of computer science. Coding classes in schools need to be part of the national curriculum at an early age. While the EU Code Week and the EU Digital Education Action Plan at European level are important initiatives, digital and computational skills must be further promoted and implemented at national level. Lifelong education policies should ensure that the existing workforce remains efficient and equipped with the necessary competences and skills. With the advent of new technologies and further innovation, creative skills will further evolve and need to be conveyed alongside computational skills. An important part of the skills strategy is also to train educators and teachers to be able to teach such skills to the pupils and students.*

9. *There is a clear role for the EU and national governments to further support the development of critical, creative and computation skills that will be vital to ensure that Europe is competitive. The proposal in the White Paper to engage the Digital Education Action Plan is important to improve education and training systems and to make them fit for the digital age and to raise awareness of AI at all levels of education, and for upskilling the work force. Increasing the number of women that are trained and employed in this area merits specific focus and research demonstrates that video gaming girls are three times more likely to enrol in STEM courses[11]. Research has shown that playing video games can enhances leadership, improve decision-making and reduces stress and depression in adults as well as teach kids computational skills and empathy. Gaming is the gateway to these 21st century skills and to STEM. Among teenagers who play games online with others daily, 74% have made friends online and 37% have made more than five friends online.*

10. *Part of a skills strategy should be to **ensure that the talent trained in Europe stays in Europe**. Video games companies around the world are competing fiercely to recruit the best European talent for roles which are highly specialised and forward-facing. Many studios are based in Europe because Europe has creative and computational talent. And this is also why foreign companies invest in Europe. Europe's regulatory environment must encourage innovation and investment to avoid a brain drain of the trained workforce towards other regions in the world. Relying on regulatory stability in the field of intellectual property is particularly important, as several hundreds or thousands of contributors are involved in the course of the development and production phase of a new game. The sector is therefore concerned by the fragmented approach that the implementation of the EU Copyright Directive will result in, and calls on*

[9] The Digital Skills Gap in Europe, p. 2

[10] State of the Polish Video Games Industry 2017, p 81-82

[11] HOSEIN Anesa, "Girls' video gaming behaviour and undergraduate degree selection: A secondary data analysis approach", Computers in Human Behaviour, vol. 91, February 2019, pp. 226-235, University of Surrey

Member States to develop initiatives at national level that will support investment the industry. Access to talent is important and immigration policies should allow European business to employ the best AI talent from abroad, where needed.

14. ***SME Focus.*** *Many video games studios in Europe are SMEs and micro businesses. As proposed in the White Paper it is important that Digital Innovation Hubs support SME's to access knowledge and use of AI. For example in the UK, the Digital Catapult supports start-ups and SME's in their AI journey with access to computational power, alongside business and investment support. It also provides important guidance to SME's on ethics and it has created an applied and practical methodology for AI ethics, designed for businesses and individuals wanting to adopt an ethical and responsible approach to their machine learning development. This type of hands-on advice is crucial for start-ups because technology and guidance can help business to develop to the next level. To ensure that the role of Digital Innovation Hubs fulfil their function towards SMEs and start-ups at national level in the area of AI, focus should be on ensuring that the DIH is equipped with the relevant capacity and competence in AI and in other key enabling technologies to be able to provide the relevant guidance and support to SMEs. Exchange of best practices between DIHs in the field of AI should be encouraged for the benefits of SMEs. The European Commission should also ensure that the equity funding pilot scheme has the capacity to reach highly innovative AI driven start ups from cultural and creative industries with significant market potential, as these may struggle to access seed funding after the Covid-19 outbreak. The pilot scheme should be incentivised to cover also small high risk investments from €25 000 to €100 000.*

15. ***Partnership with the private sector*** *as recognised in the White Paper is important. In addition to public private partnership within the Horizon Europe programme, Digital Innovation Hubs across Europe can constitute important national drivers for involvement of the private sector in setting the research and innovation agenda. Also, video game companies are already engaging in partnerships with universities and academics to further collaborate in R&I. For example Ubisoft has set up "La Forge" which is an entity that aims to accelerate R&D through prototyping, by bringing together experts from the industry and from the academic sector[12]. The main objective of the programme is to connect academics and the industry, leading to innovative and original AI practices and helping fundamental AI research for all. Further, Sony Interactive Entertainment (SIE) was one of the original supporters of the IGGI Research Centre[13] which launched in 2014 and now sits on IGGI's Advisory Board. The IGGI Research Centre is recognised as the largest doctoral programme in games research worldwide and AI and machine learning in games is one of its areas of focus. SIE has sponsored and hosted IGGI students researching AI including machine learning. SIE also runs a Global Academic Programme under which it has participated in research partnerships with several UK based Universities involving AI research.*

11. ***Balanced data regulations*** *are essential for promoting innovation. Data is an important, if not the most important element for the economic development of a sector such as video games. ISFE welcomes the Commission's ambitious strategy to build a European data space on the scale of the Single Market in which the potential of data is used to create wealth for economy and society, and supports its prime goal to give a leading role to the EU in the data economy*

[12] https://montreal.ubisoft.com/en/our-engagements/research-and-development/
[13] http://iggi.org.uk/

by increasing the amount of quality data and by incentivising data-driven innovation. Without data, the development of AI and other digital applications is not possible.

12. *For the video games sector, without data there would be no video games as game play data allows the development of new games, ensures that the existing games function as they should, and importantly keeps the game environment secure (both from a network security perspective but also from a player safety perspective). ISFE agrees with the White Paper that the enormous volume of new data yet to be generated constitutes an opportunity for Europe to position itself at the forefront of the data and AI transformation. ISFE adheres to promoting responsible data management practices to build trust.*

16. *There will undoubtedly be challenges with AI algorithms using machine learning to process data. Transparency requirements may conflict with other laws such as the protection of confidential business information which is crucial for a healthy and competitive business environment. Government and interested parties will need to have an ongoing dialogue on how to achieve balanced data regulations that can work with innovation. The proposal for an E-Privacy Regulation is in conflict with the GDPR, which could jeopardise the objective of ensuring trustworthy AI. Without striking the right balance, the E-Privacy Regulation presents the real risk that, at best, the use of European datasets to train and improve AI algorithms will be severely restricted, and at worst, simply not available for use at all.*

17. ***AI for the Cultural and Creative Sectors**. 7.1% of Europe's active population work in the cultural and creative industries, which represents 15 million direct and indirect jobs, while the creative industries overall contribute to 6.9% of EU GDP. [14]Europe needs to support the use of AI in cultural and creative sectors by investing in technology, business and in content innovation. Many creative businesses are SME's and may not benefit directly from public private partnership, testing facilities as these support tool are more focussed on technological innovation rather than on innovative artistic content and business models enabled by AI. National Digital Innovation Hubs and innovation policies need to take this perspective into account.*

18. *As discussed in paragraph 6 above, AI is also used in the creative process of making a video game. From the perspective of AI as an element of creating content because AI algorithms can create works on their own, usually copying a style learned from a data set, there are specific challenges. IP restrictions on a dataset can make the ownership of works created on the basis of that data set uncertain. For example, if images of the complete works of Pablo Picasso were to be used by an AI to create a game that exhibited the same style of art, the resulting artwork that the AI would create be different than any of the works that were used for learning the art style, but who would be considered the author of the resulting art? Would it be considered to fall under an exception to the exclusive rights? Ultimately, who would be considered to be the author or the copyright owner in the AI produced work?*

[14] EUIPO 2019: https://euipo.europa.eu/ohimportal/en/web/observatory/ip-contribution#ip-contribution_1

Section 2: an ecosystem of trust & a regulatory framework for AI: High risk and low risk approach for AI

ISFE's response covers the proposed approach in the White Paper regarding high risk and low risk AI application, and the voluntary labelling scheme.

19. *The White Paper proposes to define a high risk AI application if it is subject to two cumulative criteria: (i) the application is employed in a sector where significant risks can be expected to occur; and (ii) the application is used in such a manner that significant risks are likely to occur. Moreover the White Paper mentions that each obligation should be addressed to the actors who are best placed to address any potential risks. Such clarification regarding which obligations or requirements should apply to developers and which should apply to deployers is important. In many instances, particularly in the video game sector, the data provider, the AI developer, and the AI deployer may all be separate entities, but all are essential for a functioning ecosystem. It is important to recognise the separation, and unique responsibilities, of such roles.*

20. *The White Paper recognises that developers and deployers of AI are already subject to European legislation on fundamental rights (e.g. data protection, privacy, non-discrimination), consumer protection, and product safety and liability rules. For example the GDPR already imposes the obligation to inform data subjects of automated decision making and provides them with the right not to be subject to a decision based solely on automated processing if it produces legal effects on them or similarly affects them. The GDPR also places an obligation on organisations to carry out Data Protection Impact Assessments to mitigate any high risks that AI applications may pose before such an AI application is implemented. New regulation and/or updating existing legislation in some areas of applications of AI may be necessary, especially where damages may cause substantial harm or pose a material risk of consequential impact on individuals and society, such as facial recognition technology for example. It is important, however, that any regulatory framework is flexible enough to embrace the evolution of wide AI technology to ensure that Europe remains competitive in strategic areas in the global ecosystem. An important aspect of a regulatory framework would be to clarify which sectors and uses should be covered by applicable legislation and which obligations would apply to which actors.*

21. *Any new legislation must be considered with a cautious approach and should be limited to high risk AI applications. Many AI applications pose no or a low risk to individuals or society. Application of new compulsory requirements to low-risk applications would result in a disproportionate diversion of industry resource, stifling innovation and damaging Europe's competitiveness in global AI development. Because many AI applications pose no, or a low risk to individuals or society, it is important that the approach proposed by the European Commission provides the necessary clarity to ensure that legislation remains proportionate and targeted to fulfil its objectives, to avoid that sectors that do not pose significant risks fall under a specific legislative framework.*

22. *A trustworthy and responsible AI approach is important also for no or low risk AI applications. The video game sector promotes responsible data management and takes great care to protect*

player data – whether used traditionally or by AI and to make sure the data is used in a manner consistent with privacy principles and regulations, such as the GDPR and the ePrivacy Directive. Many video games companies have adopted or are in the process of adopting their own internal policies or best practices around using AI to address any bias and transparency issues. Machine learning on large data sets can inject bias into the resulting algorithms because data frequently has hidden patterns or assumptions built within it that the AI engineers may not see, or they face difficulties in interpreting the complex and inscrutable AI algorithms produced with machine learning. When decisions are made by AI that affects a player or needs to be further explained, a human-supervised approach is used as explained above for example in paragraph [5(d)]. Video game companies are taking these ethical challenges seriously by developing internal policies on these issues.

A voluntary labelling system for AI systems that are not considered high-risk in addition to existing legislation

23. *As technology is evolving at a rapid pace, a European AI framework needs to be flexible enough to embrace the evolution of technology to ensure that Europe remains competitive in strategic areas in the global ecosystem. Competition, technology and customers are the natural drivers of the market. Steps that would artificially channel developments along a particular path needs to be envisaged with caution.*

24. *A guiding principle for the European Commission should be to support organisations that are developing or deploying AI to allow them to identify risks or harms and to ensure guidance on process to follow to mitigate any risks. Where there are industry best practices or voluntary frameworks already in place, these approaches should be further supported instead of a 'regulation first' approach. For example, Digital Innovation Hubs, such as the Digital Catapult have developed useful guidance for start-ups which support them in their use of, and approach to an ethical AI. Also, the UK regulator the Information Commissioner's Office in partnership with the Alan Turing Institute have very recently issued guidance to give organisations practical advice to help explain the processes, services and decisions delivered or assisted by AI to the individuals effected by them.[15] Whether a legally binding voluntary scheme or another governance model for low risk AI applications, or a co-existence of several models, should be considered needs further discussion.*

25. *Flexibility and recognition of best practices should be a focal area of the Commission, to avoid channelling all low risk AI applications into a voluntary legally binding scheme, which could create significant administrative burdens as well as disincentivising investment and innovation in AI. Guidelines or best practices that are not part of such a voluntary scheme could be as efficient in creating responsible and trustworthy AI. This is especially important to consider because low risk AI must already comply with EU legislation in the field of fundamental rights (e.g. data protection, privacy, non-discrimination), consumer protection legislation, and product safety legislation.*

[15] https://ico.org.uk/for-organisations/guide-to-data-protection/key-data-protection-themes/explaining-decisions-made-with-ai/

26. *From the perspective of video games where AI applications appear in a controlled virtual environment, while some requirements can be useful guidance because of how AI is used (e.g. to improve the player experience, to ensure that the gameplay environment is safe both from a network security perspective and from a player safety perspective) such as (i) information and transparency on the purpose and the nature of automated decision making such as AI systems are important to create trust with the player, and where information requirements are foreseen in the GDPR, (ii) robustness and accuracy of AI systems are also important, and (iii) human oversight in relation to any online interactions such as in the moderation of online communities to support player safety, such requirements can be part of guidelines or best practices but do not necessarily need to be part of a binding scheme to be efficient. More generally, given the nature of the proposed low risk voluntary labelling system, which would become binding once a developer or deployer opted in, it would appear disproportionate and harmful to innovation and Europe's competitiveness to require compliance with all the requirements that are required in high risk applications. This would effectively categorise low risk applications as 'high-risk' once a developer or deployer opted in. Furthermore, different requirements are more relevant to different sectors and ISFE would respectfully suggest that the low risk approach should take into account the nuances of different sectors.*

Ensure that AI is trustworthy, secure and in respect of European values and rules

27. *While an enforcement approach can be justified for high risk AI applications, a careful approach should be taken as regards low risk AI applications. As stated in the White Paper, the existing EU legislative framework already applies to AI, in particular in the area of fundamental rights. The existing legislation includes enforcement mechanisms specifically targeted to any breaches, whether that is consumer protection legislation or data protection or privacy legislation. Therefore, for low risk AI, the existing enforcement framework needs to be considered first and foremost.*

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