(Draft) EXECUTIVE SUMMARY

The present study analyses the video game software industry, its market potential, its value chain organisation and business models and its current line of evolution, so as to outline major emerging technologies and to investigate on their disruptive potential. Moreover, it aims at assessing the strengths and weaknesses of EU firms, in order to highlight drivers, opportunities and challenges for improving the future competitiveness of the EU video game software industry.

I. Mapping a very young industry

In spite of being a very young industry, video games already managed to become a significant and growing share of the media and content industries. The global video game market is estimated at some 45 to 50 billion € as of 2009, and is expected to grow four times faster than the media and entertainment market\(^1\) to which it belongs. The former one is expected to grow by almost 70% to over 70 billion dollars by 2013, whereas the latter one is expected to grow by only 17%. The video game market already outgrew the cinema market.

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\text{Global video games market, million US $, PWC 2009}
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The Europe-Middle East-Africa (EMEA)\(^2\) region is the biggest market for video games: France, Germany, Italy, Spain and UK, in 2009, accounted for 15.2 billion dollars, which is equivalent of nearly 30% of the global video games market. The console game sector is the biggest component of the EU market and is now eight times the size of the one-time market leader, PC games with one analyst predicting the size gap to grow to ten times by 2013\(^3\).

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\(^{1}\) Media & Entertainment includes: internet access fees, internet advertising, TV fees, TV advertising, Recorded music, Filmed entertainment, Video games, Consumer magazine publishing, Newspaper publishing, Radio, Book publishing, Business-to-business publishing

\(^{2}\) Europe is the core market of this region.

\(^{3}\) Price Waterhouse Coopers Global entertainment and media outlook; 2009-2013
Still, maybe even more important than its size and its growth rate, the Videogames Software industry appears to be one of the most innovative labs for the coming Digital Economy: it is developing and experimenting new digital services (on-line, off-line and mobile) that manage to reach a growing share of the population. Born digital, the industry shows a digital growth, that is, taking advantage of many opportunities to offer user-friendly, intuitive services at very large scale. Such services, mainly based on software development, progressively invade other sectors of the economy as casual games, adgames or edutainment, multiplying the supply side actors, as well as the potential audiences and worldwide communities or the access platforms (consoles, portals, mobile handsets, etc.). One might expect these quasi-experiments to offer essential core lessons to such sectors as eGovernement, eHealth, eCulture or eEducation, seen as more serious than Games, but failing up-to-now to meet their targeted audience with a well adapted offer of e-services

II. The traditional value chain

The following is a traditional view of the value chain, adapted in particular to the specifics of the Videogames industry. It is very useful to describe, in a static way, the roles and positions of the various actors in the value chain. But it fails to capture the dynamics at stake.

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<table>
<thead>
<tr>
<th>Year</th>
<th>Total Video Games</th>
<th>Total Media &amp; Entertainment*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>43,460</td>
<td>1,373,941</td>
</tr>
<tr>
<td>2008</td>
<td>51,390</td>
<td>1,408,950</td>
</tr>
<tr>
<td>2009</td>
<td>55,089</td>
<td>1,354,068</td>
</tr>
<tr>
<td>2010</td>
<td>58,383</td>
<td>1,359,495</td>
</tr>
<tr>
<td>2011</td>
<td>61,604</td>
<td>1,411,788</td>
</tr>
<tr>
<td>2012</td>
<td>67,026</td>
<td>1,506,409</td>
</tr>
<tr>
<td>2013</td>
<td>73,513</td>
<td>1,613,173</td>
</tr>
</tbody>
</table>
In this value chain, the platform hardware owners (Sony, Nintendo, Microsoft) develop their strategies within a strongly oligopolistic market, both for home and handheld consoles. These strategies are reinforced when considering the proprietary characteristics of the Operating Systems running on those consoles, as well as when observing the vertical integration of the industry. In particular, those hardware owners are often also acting as game publishers and own development studios. This dominant position creates tensions with the complementary need to develop an active community of developers.

Second, publishers occupy a stronghold for most type of games development partly because video games together with all digitalised creative content goods have their production characterised by high fixed costs and low marginal costs. The initial financial investment to create the first "copy" is extremely high, while once funded, the additional copies can be (re)produced (but necessarily distributed and sold) as at almost zero cost. This creates a need for an early stage investment that affects the power relation in the value chain, and leads to the emergence of the publishers as financing actors, and therefore dominant actors to the detriment of the studio developers. Those publishers, out of which some are also the platform owners (Nintendo, Sony), behave again within an oligopolistic market.

Publishers and platform hardware owners tend to dominate but are more stable than other segments. Oligopolistic markets are a feature of the platform hardware and publishing segments.

Within the software production process, the video game software industry needs to work out its position taking in account the central role of middleware, serving as "game engine". Middleware is crucial to enable portability among platforms thereby permitting platform independency, and to allow third parties to develop applications. It is the access, the modularity, the functionalities and the portability of the middleware that will largely determine the software development of the game and its market potential. Higher level applications, the game itself, are developed on top of those game engines, which is the task of the studios and developers teams.

III. Trends

The market for video games is rapidly changing. Technological achievements and gaming diffusion across ages as well as competitive pressure end up changing the market.

One of the disruptive trends in the video games business is the emergence of new actors coming from different businesses, accompanied by the possible short-cutting of existing actors in oligopolistic position. The structure of the industry is still a work in progress: the relative position of each player in the value chain is not stabilized (hardware producers, game developers, publishers, software producers). New companies might become essential intermediaries in the video games value chain, such as on-line portals (Google, Yahoo, pogo.com), Internet service providers, or even Telecom Services or Telecom equipment manufacturers companies (e.g. Nokia). A new market dynamic is created as it also allows
entering new partnerships with other organizations (movie industry, sports organizers…) and more lifestyle partners, opening up new experiences.

These dynamics result in further changes in already differentiated business models, which in fact are still an open issue. Who does and will benefit, in economic terms, of the growing videogames market can be seen as a vivid battlefield.

Meanwhile, the videogames market grows, not only in value but also in audience. The demand has changed under the pressure of a variety of factors such as technological easiness, the emergence of social computing and communities or the supply of simple and short games, capturing a demand potential across age categories, socio-economic classes, or male and female consumers. In particular, the Casual games are an important and rapidly growing subset of online games and are now greatly expanding the numbers of gamers, stimulating a related market for associated advertising.

Finally, really innovative technologies are potentially disruptive, as has been seen with improved Human-Machine interfaces (Wii example). Technological progress might still influence the business trajectories.

Within such moving context, Online and Mobile video games are expected to see their markets increase most, surpassing off-line PC games, handheld video games, trailing only console games in the medium-term future. The growth of the video games software of the market is again expected to be primarily driven by online and wireless game software, while hardware would proportionally decline in terms of revenues, changing hence the rules of the game.

IV. Where does Europe stands?

Europe appears to be currently present at all stages of the software value chain.

- While absent within the consoles hardware segment, it challenges the incumbents in the mobile segment with Nokia's Symbian operating system environment
- The European industry is only represented among the major publishers by two companies, Ubisoft and Atari, out of the top world video games publisher
- The European industry also supplies a large share of world's middleware needs
- It hosts a large population of developers' studios; often the creators of major market successes. This numerous population of highly creative small development studios is observed mainly in the UK, France, Germany, the Nordic countries and to a lesser extent in Spain.

V. The coming of an era: on-line and mobile games

While market figures indicate the relevance of the video game market and of its segments related to software, this interest is likely to be strengthened by a key aspect of this industry which is its capability of succeeding in investing on the development and introducing disruptive technologies. Our analysis points at the likelihood of such technologies emerging within the realm of on-line and mobile games.

Mobile games, challenging the monopolies of existing OS owners and offering a new distribution channel to developers, together with on-line games (e.g. Massively Multiplayer Online Games: MMOGs) offering a new role to users, short-cutting potentially the publishers and creating different revenues streams, are emergent trends that are expected to affect the current and future dynamics in the video game software industry, offering a key for the
interpretation of foreseeable changes in the European video game software industry competitiveness.

In the EMEA region, a double digit annual growth rate is still foreseen until 2013 without overlooking the fact that EU is strong on telecom services especially mobile services.

In such a context, it appears important to understand how those different European actors will find their fair benefit within the upcoming transformations of the video games industry.

**Online and wireless video games market by region - 2005-2013, PWC 2009**

*Online value creation*

Video games, which normally allow a non linear interaction with the user (which is the case, instead, of music and movies), are getting the most out of the possibility of being played online, by exploiting the promises offered by massive multi-players interaction, creation of persistent virtual worlds and characters, multiple entry points and continuously updated plot enriched by the contribution of user determined content.

Online games in fact share with the video game sector in general most of the peculiar characteristics of its production process, in particular the high ICT intensity and the highly technical nature of the creative activities leading to the production itself. However, online games share, therefore, the difficulties in measurement, observation, and identification of suitable indicators which affects software in general, and if possible the additional characteristics of online games complicate the picture even further.

If in principles the so-called browser-based games are rather simpler than client-based online games, the evolution in available software engines is supporting progressive increase in the power of browser supported applications, and multiplayer interactions is already possible. Nowadays multiplayer browser-based games are available, allowing for all the types of multiplayer game flow: not only turn-based games giving turns to each user to execute his tasks, but also real-time games giving real amount of time to users to act.

Casual games are an important and rapidly growing subset of online games and are now greatly expanding the numbers of gamers and also stimulating a related market for associated advertising.
In the past years, the deployment of online games have been progressively concentrated on some internet portals serving the PC based side (like, among many others, Valve's Steam Service or Manifesto Games), and on a few, very powerful, network platforms for console games, each controlled by the provider of the console's hardware. In networks such as Xbox Live, Playstation Network and Wii Virtual Console it is easy to recognise the gateway for online playing and games download of each of the three most successful console and handheld platforms manufacturers.

Independent applications stores are growing, providing online games access to PC users together with the possibility to download games, but also movies, music, additional contents. In the same way, also console-oriented gateways are increasing their importance and audience by differentiating the type of content and services that they allow to access. Starting as gateways for accessing video games, and related contents and communities, they are more and more offering different kinds of digital contents and resources.  

This is in line with the process of digital convergence which have been already acknowledged in literature (Screen Digest Ltd et al., 2006), and which is based on digital distribution of different types of content on one side, and on the diffusion of the availability of interactive capabilities to the consumers. Such a phenomenon is not only affecting the video game industry, but also the movie and video one, the music industry, mobile communication and the whole publishing sector in general.

Going mobile

It also appears that the necessary conditions for the success of mobile content and applications, mobile games in particular, are already met in most of the developed countries. Broadband mobile data networks are increasingly available and affordable. This is also the case of smartphones – and other smart devices – as they are becoming the standard handset in many markets. In addition, the mobile platform offers a number of particular features, much suited to a successful massive adoption of gaming: wide demographics; ubiquity; a personal device able to maintain close links with the social network for multi-player gaming, community involvement and allowing the user to become co-creator of content; and, eventually, able to supply games adapted to the context of the user.

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4 The key dynamics of video games in general are described in a more general framework in Mateos-Garcia et al. (2008).
Online games share video games share in the total video games market, advertising included, 2005 - forecast 2013, in%, PWC 2009

![Online & wireless video games share in the total video games market](image)

However, mobile gaming confronts also a number of challenges, ranging from technology and economics to the institutional/regulatory framework. Enabling innovation in this field is all the more relevant for Europe as the region relies on a powerful mobile industry - device suppliers, network suppliers and mobile operators - and, logically, considers the cultural aspect of games as a differentiating asset.

Observing those two emerging trends - on-line and mobile gaming – it points at the expansion of the videogames industry in terms of supply-side actors (and issues), demand (across various demographic variables), technologies (and their accompanying technological and non-technological challenges, and business models (largely beyond advertising). This invites the analysis to move from a traditional view of the value chain, to a more dynamic view on the "ecosystem" of the videogames industry, seen as a laboratory of ideas and achievements within the broader realm of the emerging eServices domain. The following picture is a tentative to capture this new, still not measurable – reality.
VI Are policies needed?

It must be noted, than while more and more studies try to catch the dimensions of the videogame industry, the lack of official data clearly constitutes a constraint to the appraisal of its potentials and to the understanding of the dynamics of this sector. It is, for instance, highly problematic to break down the revenues along the value chain while it would be highly meaningful to compare the revenues, the shares and the growth perspective of each of the segments. Such an assessment would help to better delineate the policies needed, if any.

Nevertheless, the sheer figures on the size of the video game market indicate that the relevance of the video game market and of its segments related to software is of outstanding interest, and this market is supposed to increase in the coming years. This interest is likely to be strengthened by a key aspect of this industry which is its capability of succeeding in investing on the development and introducing disruptive technologies. Through technology transfer other industries can benefit from research and development, experiments and large-scale implementation which take place in the framework of video game related products. This digital native may turn out to be the living lab of the digital economy.

If games are nowadays among the most advanced, sophisticated resource demanding types of software applications, then it may become a strategic area for the EU expertise. From a policy viewpoint it is all the more important to understand where the EU stands.

Some necessary conditions seem to be met to supply a sound basis for the competiveness of the EU Videogames software industry:

- The EU benefits from a rich milieu of developers and an important population of middleware producers,
The EU is strong on telecom services especially mobile, with seasoned customers. However these positive conditions may not be sufficient to overcome the weaknesses in publishing and segments of devices. Other enabling specific policies could play a key role. For instance, the deployment of the next generation of broadband (wireline and wireless) or adequate business conditions for creative developers (funding, venture capital…).

These developments are raising further questions that may turn out to be crucial for future EU policies:

- On the cost structure: are barriers to entry falling in some segments?) For instance is the online development giving more space for the creation of new studios? How does this question look in the Mobile domain?

- On the evolution of the market structure: are we moving toward more concentration? Or are, for example, on-line browser games allowing more creative entry?

- Are the skills available for the companies or do we still need a pro-science, pro-technology and pro-entrepreneurs EU education policy?

- Do we have the right copyright, privacy, data protection regulations?

- Is there room and means for growing rapidly large global European companies in the videogames arena?