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Executive summary

This deliverable is the output of activities pertaining to the third task of the Gaming Horizons (GH) project: Task 2.3: mapping exercise and critical analysis. With reference to the Grant Agreement (GA), this output is part of the first phase of the project: informed challenge through landscape analysis, which considers critically the official “H2020 discourse” on gaming –related themes, while also taking into account the broader policy context in which those themes are located.

While game-based technologies and related approaches undoubtedly have great economic and educational relevance, they are also powerful cultural vehicles for social representation (for instance of gender and ethnicity), and carry important assumptions on human behaviour and how to “engineer” social change. In Gaming Horizons, we aim to examine these themes and assumptions through critical analysis and a process of stakeholder engagement, in order to define “alternative framings” where the pursuit of innovation meets social responsibility. While these framings will be mainly concerned with gaming and gamification as areas of socio-technical innovation and components of an emerging market, they will have broader implications for the Responsible Research and Innovation (RRI) agenda.

This report describes a study where discourse analysis was applied to official policy documents and funding calls published from 2011 to 2016 as part of the process leading to Horizon 2020 (H2020), the flagship research and innovation programme of the European Commission. Our primary objective was to analyse the policy and funding context that surrounds gaming in Europe. However, it soon became clear that it was impossible to consider this particular area without taking also into account the broader policy landscape. Therefore we proceeded gradually from a descriptive account of RRI and ethics in H2020, to the analysis of how actors (who include, for instance, “researchers” or “citizens”) are represented across the H2020 thematic priorities, to finally shift our focus to a more detailed examination of funding calls directly and indirectly concerned with gaming, serious games and gamification.

We carried out a targeted web search to identify official EU sources in the public domain, selecting: a) four documents outlining the strategic and policy outlook of H2020; b) a subset of seven funding calls where gaming, gamification and serious games were primary or secondary aspects. As already mentioned, our empirical approach draws on critical discourse analysis. Critical discourse analysis is, at the same time, a theoretical framework and a social research method that involves the examination of how language is implicated in the generation of the social world, focusing on how relationships and identities are both represented and constructed through text, words, and communicative practices. In particular, the analysis of strategic documents shows how actors are represented and positioned discursively, beginning to unpick the biases and cultural assumptions that are not always directly observable in the text. Subsequently, the funding call is treated as a genre, that is, a set of textual and communicative conventions designed to express, in relatively unambiguous terms, expectations and criteria that underpin important funding decisions.

The main overarching finding of this report is the distance between themes of Responsible Research and Innovation featured in the H2020 high-level discourse, and what is actually prioritised through a more critical analysis of documents and domain-specific funding calls. While H2020 signals without doubt an attempt to integrate RRI across the European research and innovation agenda, the programme itself remains firmly rooted in a market-oriented set of priorities, and there appears to be a gap between the rhetorical treatment of ethics and social responsibility in the high-level strategic discourse, and their representation in the more operational accounts of the programme and in the actual funding calls.

More specific insights that emerged from the analysis can be summarised as follows:

- The economic anxiety of Europe, the protection and nurturing of Small and Medium Enterprises (SMEs) and “excellent”, internationally mobile scientists are the main themes and actors in H2020. The programme speaks also to citizens and society at large, but in less eager terms, and assuming a condition of deficit and passivity.
- The secondary role of ethics and social responsibility becomes strikingly apparent in the funding calls, which fail to provide information as to how these notions are meant to be accounted for in projects and emphasising, by contrast, economic growth and innovation over everything else.
- Gaming and gamification are treated, first and foremost, as emerging markets to be nurtured. The official H2020 discourse emphasises a strong mechanistic, instrumental perspective of game development, and the call texts show little appreciation for the expressive, cultural and aesthetic dimensions associated

with design or gameplay, viewed as cultural practices situated in contexts, mediated by shared conventions, ideologies and politics.

1. Introduction

The rise of the information society is closely associated with a debate in the social sciences and the humanities concerned with the relationship between digital technology, human nature and social change – either in terms of measurable impacts or less quantifiable influences. The debate is often framed by ethical and political considerations that emphasise the more problematic consequences of digital pervasiveness, for instance in terms of data privacy and confidentiality, surveillance, labour-disruptive automation, information overload, and so forth.

As noted by Floridi (2013), this debate has traditionally occurred in relation to specific technologies, for instance computer ethics (Johnson and Miller, 2009), Internet Ethics (Langford, 2000) or “robo-ethics” (Wallach and Allen, 2008), as opposed to a wider scope approach, advocated by Floridi himself, concerned with the “ecological management and well-being of the whole infosphere” (Floridi, 2013 p. 21) .

Beyond the specificities of information ethics as a field of philosophical and empirical inquiry, discussions about ethics and social responsibility in relation to technological innovation have recently emerged as important themes in the European policy space, under the label of Responsible Research and Innovation (RRI). According to von Schomberg (2013, p.1) “RRI should be understood as a strategy of stakeholders to become mutually responsive to each other and anticipate research and innovation outcomes underpinning the *Grand Challenges* of our time for which they share responsibility”. These debates have had a particular influence on the latest iteration of the flagship European Research and Development programme: Horizon 2020 (H2020).

In H2020, societal challenges and criteria of social responsibility were defined at a strategic level through consultations with stakeholders and experts, but the question of whether this renewed emphasis on social responsibility is bearing fruit remains, for the time being, open.

Against this complex background, this project aims to move beyond a potentially paralysing stalemate between those who argue for a more ethical and responsible approach in research and innovation, and those who brandish economic arguments to shy away from any discussion about social responsibility. We aim to achieve this ambitious goal in two steps:

- a) By analysing critically how ethics and social responsibility are actually featured in the official “discourse” around research & innovation – reviewing the research literature (see deliverable D2.1) and consulting representatives from various stakeholder groups, including policy makers, researchers, developers, practitioners and users.
- b) By developing “alternative frameworks” in a dialogic fashion, taking into account the views and priorities emerging from various sectors of society. We are doing this in relation to gaming, because game-based technologies and related approaches have great economic, cultural and educational relevance, and because gaming carries important assumptions about human behaviour and how to “engineer” social change. We hope however that many of the recommendations made in the context of this project will not remain technology-specific, as we agree with Floridi’s argument about the need for a unified approach to ethics and social responsibility in information technologies.

This report, alongside Deliverable D2.1 (Systematic Review and Methodological Framework), is part of the first phase of the project. During this phase we examined the state of the art of gaming research, considering established work on the psychological and educational outcomes influenced by games, as well as emerging work concerned with the relationship between ethics and video games. In this report, we present findings from a study that analysed the way themes of ethics and social responsibility are featured in the policy discourse that surrounds the H2020 programme of work, with a specific focus on gaming and game-based innovations. Our objective was to unpick the differences between priorities articulated in high-level policy documents, and the actual operationalisations of those priorities in funding calls.

We begin with a brief methodological note that positions the study in the area of discourse analysis. We then continue with a review of the literature that examined the relationship between technology and social change from a critical perspective. Following this summary of relevant conceptual contributions, we consider more empirical work that examined specific instances of the EU official discourse. This section paves the way for the second part of the report, in which we describe the discursive analysis of a collection of official H2020 sources. In particular, this empirical section is based on the pragmatic implementation of two discourse-analytic techniques, namely actor analysis applied to policy texts, and move analysis applied to a subset of H2020 funding calls which were directly or indirectly related to gaming and gamification. This juxtaposition of strategic texts and funding calls is where the analytical focus is directed, and some interesting patterns will be introduced and discussed - some of these patterns are specific to serious gaming and gamification as areas of socio-technical innovation and as components of an emerging market, others are broader in scope.

2. Methodological note: (Critical) Discourse Analysis

We have used discourse analysis to interrogate and critique the official “H2020 discourse” on gaming and gamification. Discourse analysis involves an examination of how language is implicated in the generation of the social world (Gee, 2014), focusing on how social relations, themes and identities are both represented and constructed through text, spoken word and communicative practices (Fairclough, 2003; Van Dijk, 2008). It has been used in a diverse range of contexts, and applied to an array of different types of text (Johnstone, 2008).

Sussman (1997) suggests that language “transmits various semantic codes that have underlying narratives, stories and ways of seeing the world” (p. 30) and therefore a close examination of these can help to reveal the often concealed power structures and agendas that underpin public discourse. Whilst discourse analysis approaches may be concerned with an investigation of specific linguistic units, critical discourse analysis (CDA) in particular is defined by a problem-oriented approach to studying complex social phenomena (Wodak and Meyer, 2009, p. 2). Weiss and Wodak (2007) suggest that there is no singular, consistent approach to conducting CDA, suggesting that it can be guided by a range of different viewpoints and perspectives.

Van Dijk (2008) suggests that CDA can be used to study how “social power abuse, dominance, and inequality are enacted, reproduced, and resisted by text and talk in the social and political context” (p. 352). However, Wodak and Meyer (2009) also seek to clarify that “critical” is not synonymous with “negative”, whilst Wodak (1999) suggests that “critical means distinguishing complexity and denying easy, dichotomous explanations” (p. 186). This means that CDA can be used to investigate discourse in a particular domain, even when the social phenomena under consideration may not be particularly contentious.

Whilst discourse analysis can focus on spoken or written language, Fairclough (2003) frames CDA as an approach that involves the analysis of predominantly written texts, with a view to understanding their social effects (p. 11). Fairclough (2003) conceptualises texts themselves as an integral part of social events, positioning them as agentic and therefore responsible for shaping and structuring the social world. Furthermore, Weiss and Wodak (2007) indicate that texts and discourses intersect in intertextual and interdiscursive relationships with other texts and discourses, suggesting that these are intertwined in multiple complex ways. These relationships and interactions are therefore invested with “power and ideologies” (Wodak, 1999, p. 186). The process of critical discourse analysis involves an examination of what is explicit in a text, as well as what may be implicit (Fairclough, 2003, p. 11). Therefore, the researcher is required to relate to a text to reach an understanding of its potential meanings (intended and otherwise), through a repeated process of interpretation, judgement and evaluation (p. 11).

Discourse analysis involves treating language as “social action as well as representation” (Goodwin and Spittle, 2002, p. 243). By combining linguistic and sociological approaches to analysis, CDA enables an exploration of the “complex interrelations between discourse and society” (Wodak and Weiss, 2005, p. 124). Wodak and Weiss (2005) also note that the eclecticism of such an approach, which could be considered its strength, also requires the researcher to repeatedly reflect on the process of analysis in order to avoid epistemological contradictions. Wodak (1999) extends the meaning of “critical” to refer to the researcher’s own approach to self-reflexivity during the process of analysis; she also suggests that CDA is a particularly appropriate method for helping to chart changes in societies whose characteristics are constantly shifting

and are potentially unstable, due to the dual influences of “technologization and globalization” (p. 185).

Futhermore, CDA is said to provide a means of intervening in social processes by suggesting possible changes in response to the findings of the analysis (Wodak, 1999). Later we will use this approach to investigate how the H2020 programme of work on gamification is framed by decision makers and in the official documentation, focusing on the implicit biases in the language used. Next, however, we will provide some background to the issues involved, with regard to the (often assumed) relationship between technology and social change.

3. Relationship between Technology and Social Change

Any discussion about ethics and social responsibility in technology-driven innovation processes must engage with the relationship between technology and change, that is, with the ways in which technological development impacts on the social world. There is an ever-growing body of research that examines the connection between technology and social change (Castells, 1996; Preston, 2001; Lin and Atkin, 2011), often with a closely interconnected focus on how education is implicated in this relationship (Facer, 2011; Selwyn, 2010).

Broadly, this research emphasises that the relationship between technology and social change is complex, contested and difficult to account for. If we understand society as “a complex network of patterns of relationships” between individuals (Mutekwe, 2012) it is often suggested that, throughout recent history, technological changes have had a fundamental impact on society, particularly with the widespread adoption of communication technologies having an impact on multiple aspect of people’s lives, in respect of their domestic and work spheres. Furthermore, there exists a concurrent belief

that there was an acceleration of this impact during the 21st century, resulting in changes that are perhaps more wide ranging and ingrained, but less easy to pin down or measure.

In particular, computer mediated communication has led to many changes in the ways in which individuals interact and conduct their day-to-day social relations (Caplan, Perse and Gannaria, 2011). This has led some to suggest that society is currently living through what is termed “the information age” (Mutekwe, 2012). However, others suggest that such understandings can distort our view; that viewing technology as somehow separate from society, rather than an integral part of it, oversimplifies the process of change (Weston and Bain, 2009). The belief that technology is the main determinant that drives society and shapes cultural values is, in fact, highly contested (De Miranda and Kristiansen, 2000; Selwyn 2010). Even when understood as one of multiple factors with the potential to influence change, efforts to chart and predict how future technological development may have an impact on society are always moderated by the complex ways in which groups and individuals appropriate and make sense of technologies. Webster (2006) suggests that whilst there is an appealing “neat linear logic” (p. 264) to the claim that technological innovation results in social change, such deterministic perceptions of cause and effect misunderstand the complex and intertwined relationship between such issues.

In the light of such complexity, Webster (2006) suggests that a desire or need to describe society ultimately leads to attempts to define “the most consequential features of how we live now” (p. 1). Such attempts to classify have led many social commentators to signal that “information” could be considered a defining feature of our societies in recent years (Webster, 2006). As a result, the “information society” has been adopted as key concept used both to describe and, it can be argued, to shape the

process of social change. As we will explore later, the rise of the information society is predominantly framed, in policy documents as beneficial, powerful and inevitable. The concept itself, with its origins in social science theory, is now given a central role in developing the economic and social policies of most countries. Whilst the term is used frequently in a wide range of literature, the idea of the information society in fact describes “multiple approaches”, which are often “vague and imprecise” (Holland, 2006, p.1). Martin (2004) agrees that there is a “lack of consensus on basic terminology” (p.5) whilst Webster (2006) suggests that “there is little agreement about its major characteristics” (p. 2). Given this, Mansell (2008) positively advocates for an understanding of the information society as a fluid concept, rather than a homogenous, singular idea that privileges any particular perspective.

In spite of the definitional uncertainties, there is a perception that those in charge of designing and implementing policy persist with “techno-optimistic discourses” (Cammaerts, 2005, p. 73) that “proclaim the Information Society as providing the answer to social inequality, poverty and unemployment” (Martin, 2004, p. 5). Webster (2006) suggests that the term is often used “seemingly unproblematically by a wide section of opinion” (p. 6) and nevertheless carries significant “leverage over current thought” (p. 5), meaning that interventions framed by the concept of the information society are invariably pursued with enthusiasm (Holland, 2006, p. 1). Garnham (2000) goes further by calling the term “internally incoherent” (p. 139), branding it “an ideology” (p. 140) that is used with “casual and careless deployment in policy discourse” (p. 140) to justify otherwise questionable positions. Cammaerts (2005) suggests that, in terms of policy, such critical voices regarding the information society have been disregarded or neglected, in favour of a narrative that the technology will

have “revolutionary effects on almost every aspect of life - work, leisure, politics, capitalist economy, welfare, and so on” (p. 73).

Martin (2005) suggests that assertions relating to technology’s impact on society are difficult to critique in themselves, as the processes involved in assessing such impacts are in fact “complex and subtle” (p. 9). Taking this into account, there are those who believe that particular implementations of strategies relating to the information society have failed to deliver on a promise of delivering social and economic benefits. Holland (2006) suggests that technology reformulates economic and communication systems, productive forces, knowledge accumulation and the information capacity of society (p. 2). However, he suggests that such changes are ultimately culturally, rather than economically, focused. As such, Holland (ibid) states that understanding the concept of the information society also “requires consideration of cultural factors - the social aspects of the world people occupy” (p. 3), therefore suggesting that the information society should be understood as having socio-cultural dimensions as well as economic aspects. Similarly, whilst Mansell (2008) notes that the information society has been associated with the “innovative ideas” which provide the “fuel” for economic development” (p. 2), he also acknowledges that there are other understandings of the information society that “emphasise creativity” (p. 2) and “enable to reappropriation of techniques of socio-cultural production” (p. 2), perhaps as a means of resisting a more dominant ethos or discourse. However, whilst these understandings of the information society acknowledge both economic and social facets, it is argued by some that it is mainly the economic, market-driven conceptualisations of the information society that dominate policy (Mansell, 2008).

According to Rabina and Johnston (2010), the concept of the information society “places emphasis on information and communication technologies and their

potential role in “revolutionising” everyday life (p. 183). This recalls what Mansell (2008) refers to as a “mainstream vision” (p. 3) of the information society as a transformative force. Mansell, however, suggests that whilst this conceptualisation is problematic and sometimes critiqued, the critical voices are rarely heard by those responsible for formulating policy. As a result, there has been a “market-led emphasis” (p. 14) to many information society initiatives, resulting in the “privileging [of] technologies over human aspirations and needs” (p. 15). This has arisen partially from a focus on the online spaces generated by technology adoption, thereby “neglecting the offline environments in which participants in online communities live their lives” (p. 10). In light of this, he suggests there is a need for “more critical, context-sensitive and enabling approaches” (p. 15) in relation to ideas of the information society. Similarly, Martin (2004) suggests that, generally, governmental implementation of policy around the information society has been more successful in terms of “techno-economic factors” (p. 6) (e.g. developing infrastructure or investing in new technologies) than it has in terms of social aspects “to do with the quality of life and access of opportunity” (p. 6). Whilst the techno-economic dimension of the information society “dominates most official pronouncements” (p. 6), there is less clarity on what the societal aspect of the information society might look like.

Whilst Mutekwe (2012) argues that technology has led to societal impacts in terms of “a change in culture, a people’s way of life” (p. 236), there are concerns that particular implementation of policies relating to the information society have had detrimental effects. The focus on pushing technology as a driver for economic change, rather than focusing on wider social or cultural factors, has been blamed by some for leading to negative societal consequences. Nieminen (2016) reflects on the failure of the information society to deliver long-term positive benefits, suggesting that “ICT has

been applied in ways that are at least partly responsible for the increasing polarisation in our societies” (p. 28). For instance, he suggests that the information society has focussed largely on increasing the number of new jobs available, rather than ensuring that individuals are able to develop the skills required by these new opportunities. Framing this as a “potential accelerator” (p. 28) of social inequality, technology is implicated as having a role in the decline of the (American) middle-class, through the erosion of “the old, less-skilled middle class occupations” (p. 26). Here, technology is blamed for failing to have delivered on promises to “create new economic activity or reduce the inequality of the post-industrial society” (p. 27).

With this in mind, Nieminen (2016) advocates for an approach to ICT implementation that promotes “long-term well-being and sustainable life conditions” (p. 28) instead of pursuing short-term gains, suggesting a need to focus on “new employment and demand for skilled workforce, better education for all, increased safety at work and home, new possibilities for creativity at work and learning, more equality in healthcare and so on” (p. 29). He also advocates the need to challenge what he calls the “hegemonic discourse on the non-challenged benefits of full-scale digitisation of our societies” (p. 29) represented by the EU’s Digital Agenda for Europe. Mansell (2008) also raises concerns that economic or market-led understandings of societal development are problematic, highlighting that the internet is not the “neutral” or “free” space it is often perceived to be. He cites the proliferation of “commercial forces” (p. 9) that tend to thrive in unregulated spaces, which serve to impact on users social experiences, undermining the idea of the internet as somehow being a neutral space. Mansell (2008) also draws on the work of Antonelli (1998), suggesting that “information cannot be transformed into useful knowledge without a process of learning” (p. 8).

In other words, interventions around technology that privileged access to technology over education may only serve to exacerbate existing social inequalities. Discussions around the information society often implicitly place educational issues at the nexus between technology and social change. Here, the assumption is that that technology can offer changes in society via improved educational outcomes, albeit leading, in turn, to economic gains.

Selwyn (2010) advocates for a move beyond this kind of “technological and social determinism” (p. 10) in order to explore alternative perspectives around technology and education. Perhaps symptomatic of the economic emphasis of the discourse around the information society, he suggests that technology is often considered through a mobilisation of education approaches intended to “reskill and upskill the workforce” (p. 179), as a means of reaping economic, rather than social or cultural, rewards. Suggesting that it is not possible to assume that technology alone will necessarily lead to improvements in education, Selwyn (2010) suggests that societal changes also require cultural and social changes to be pursued alongside the economic and technological interventions.

Likewise, Facer (2011) suggests that, over recent years, technology’s potential impact on society has been led by “a vision of a global knowledge economy fuelled by international competition and sustained by digital networks” (p. x). However, she argues that such a vision is no longer sufficient, suggesting a need to rethink the potential ways that technology can lead to socio-technical change to encompass other more expansive possibilities. These include, for instance, “the emergence of new relationships between humans and technology, the opportunities and challenges of aging populations, the development of new forms of knowledge and democracy, the challenges of climate warming and environmental disruption [and] the potential for

radical economic and social inequalities.” (p. x). In other words, a vision for technology that focuses primarily on resource, infrastructure and economy overlooks wider potential impacts in relation to “our sense of selves, community and society” (p. 3). Furthermore, Facer (2011) argues that purely economically-focused visions for the information society are shaped by a sense of inevitability, thus undermining the human potential for shaping the future. Muller et al. (2006) suggest that sustainability is an issue when considering technology and societal change. They suggest that the costs of educational interventions involving technological implementation are much higher than the short-term costs of initial outlay, signalling that for sustained impacts to be made a focus purely on delivering infrastructure and access is, in itself, insufficient. This leads them to suggest that any project that seeks sustainability should include consideration of improvement over time, with support of available resources, having a positive impact on the surrounding environment which, in itself, needs to be “diverse” and “self-sustaining” (p. 1184).

The literature outlined in this section remarks on the complex relationship between technology and its impact on society. There is also an underlying criticism of the way in which such issues are simplified when operationalised through policy. There is a suggestion that framing this relationship using the concept of the information society has resulted in a focus on economic rather than cultural or societal impacts and outcomes. Furthermore, there is a belief that an overriding sense of technological determinism has served to simplify the relationship between technology and social change. This has obscured other possibilities, priorities and solutions, in terms of how technology could lead to positive socio-cultural development, necessitating an urgent reframing of the thinking in this area. There is also a belief that existing ways of thinking about and implementing technology has not always led to positive or

sustainable change in society, and that such changes are not inevitable. With this in mind, in the next section we explore the ways in which others have used discourse analysis as a method of analysis to explore EU policy.

4. Analysis of European policy discourse

If we accept that “political issues are not external to the process of political decision-making” (Daviter, 2007, p. 654) then the importance of scrutinising policy documents is clear; it is the language of policy, and therefore a process of “policy framing” (Daviter, 2007, p. 654), that helps to direct the way in which issues are discussed and shaped, influencing action and those involved in implementing it.

Wodak (1999) suggests the European Union is a “complex decision-making apparatus” (p. 189), and it is therefore “critical for democracy” (p. 189) that we gain insight into its operations through critical research. A number of studies have therefore sought to examine the discourse in (and around) documentation arising from the European Union, and member nations, in a number of areas. Wodak and Weiss (2005) interrogated the broad notion of identity in EU policy, looking at the language of policy to investigate how Europe itself was positioned by the EU. Their analysis suggested that there was a “construction of multiple identities” (p. 128) in the EU documentation, which were “attributed and allocated on the basis of hierarchical and institutional power” (p. 128). In other words, they found that the way in which European identity was positioned in the texts was both multiple and invested with power relations. In addition, the constantly shifting conceptualisation of these multiple identities contributed to attempts to legitimise the construction and expansion of the EU itself.

Similarly, Straehle et al (1999) examine how the issue of unemployment is positioned as a struggle in the EU discourse, across a range of texts including

interviews, recordings of meetings and policy, suggesting that formal policy texts serve a general legitimising function for the European Council, and a more specific “instructional” function, whereby the Council provides guidance and solutions for actual policy making. In another study, Connor and Mauranen (1999) considered 34 proposals from EU grant applications, originating from Finland. They identify and describe the common features of these texts, identifying ten “functional moves” (p. 60): “territory, gap, goal, means, reporting previous research, achievements, benefits, competence claim, importance claim and compliance claim. They consider the proposals as a genre, and draw likenesses between this and other persuasive genres, as well as identifying distinct “moves” such as achievements, benefits, importance, and compliance (p. 60). In particular, it is the latter move, compliance, which “holds out a mirror to the sponsor” (p. 60), reflecting back their “expressed wishes” (p. 60). In particular, the move framed as “compliance” within a particular call clearly demonstrates the pivotal role played by language in setting the direction of future research.

As illustrated thus far, EU policy analysis has focused on a broad range of issues. While it is important to account for the variety of interests in this area of study, in this particular piece of work we are predominantly concerned with analyses that deal with technology and the concept of “the information society” (Rabina and Johnston, 2010, p. 183).

Whilst the above example demonstrates a discourse analysis approach used to gain insight into the construction of proposal documents, the remainder of the examples in this section focus on policy documents produced predominantly by governmental authorities. As such, the analysis of these policies helps to form a picture of how

language frames action in the area of technology and society, as a precursor to our own analysis.

The work of Goodwin and Spittle (2002) is helpful in this regard, as it takes a critical discourse analysis approach to investigate the “social, cultural and economic impact of the “information society” within the European Union” (p. 225). They suggest that the EU actively constructs, through language, the development of the information society, and its own role in shaping that development. They claim that previous analysis has underestimated the extent to which language constitutes social changes (p. 243), stating that the language used by the EU in this area leads to the privileging of “economic parameters” (p. 225) over social and cultural factors. They identify how this transpires through the identification of four themes or “major discourses” (p. 225). The first theme relates to the ways in which the texts under examination use language to frame the issues involved as threat or opportunity. Here, Goodwin and Spittle (2002) identify how the idea of technological change is identified in terms of binary positions, both in relation to potential (largely economic) outcomes. This duality serves to simplify the issues involved, potentially disguising the complexity of the multiple factors and outcomes involved in the relationship between technology and social change.

Secondly, the authors describe how language is used in the policy documents to position change as unavoidable, promoting a kind of technological determinism that frames changes brought about by the information society as inevitable and external to government control. They suggest that this message potentially leads to “emotive and powerful arguments” (p. 237) that would not necessarily be generated by more nuanced approaches. Thirdly, the language of market determinism is said to be dominant in the policy documents, painting market forces as an unavoidable, unstoppable force.

Combining arguments of technological determinism with similar ideas of economic inevitability constructs an impression of a predisposed reality that cannot be challenged.

Finally, a theme of citizen vs consumer is identified in the text, whereby firstly distinct and then converging conceptions of the individual are presented using these two terms. The authors suggest that all of these ideas running through the language used in the policy documents contribute to an “ongoing tension between cultural and market concerns” (p. 245) running throughout, with the “neo-liberal concern with market forces” (p. 245) likely to take precedence due to the way in which these ideas tend to dominate the language. They give an impression of an environment where “cultural concerns” are tolerated in so far as they do not disrupt the market-focused discourse.

Similar economic concerns are highlighted by Rabina and Johnston (2010). They suggest that the EU’s information policy has been “preemptive” (p. 183), in contrast to the USA’s “reactive” approach, as technology is seen by the EU as “contributing to its larger goals and objectives” (p. 183), therefore considering it “an important part of the European Economy” (p. 183). They note that, in an action plan titled Europe’s Way to the Information Society: An action Plan (1994), the move towards mass societal implementation of technology was both likened to a “digital revolution” and framed as a process that “cannot be stopped and will lead eventually to a knowledge-based economy” (p. 183). This early example, positioning the mass adoption of technology as revolutionary, inevitable and economically beneficial, sets the thematic tone for the discourse identified by others in their analysis of some subsequent EU documentation. Whilst Rabina and Johnston (2010) note that The Bangemann Report (1994)¹ recommended an emphasis on “education and training” (p.

¹ http://aei.pitt.edu/1199/1/info_society_bangeman_report.pdf

184), they also highlight that there is an underlying belief that free market forces could play a major role in ensuring an equitable distribution of technology that would avoid a “digital divide” (p. 184).

De Miranda and Kristiansen (2012) explore the evolution of the EU policy around the information society, through an analysis of policy documents from 1990 onwards. They suggest that the idea of technology bringing “revolutionary” and “transformational” change is present in multiple documents from the EU and OECD (p.2), suggesting that this discourse around the inevitability of such dramatic changes has been “consistently reproduced” (p. 2) in the language of policy throughout the 1990s, providing a foundation for more recent discourses around technology and social change. They demonstrate how the idea of a “great technology-driven new society” (p. 2) was framed as “beneficial” and promised “the greatest rewards” (p. 3), including “social well-being” (p. 3) for those prepared to adhere to such rhetoric.

Furthermore, EU documentation from 1994 argued that those who failed to keep up with the requirements of the information society would face negative consequences in the form of “disastrous decline in investment and a squeeze on jobs” (p. 3) if they did not enter the race for participation. In this way, the language of policy is demonstrated to be an oppositional mix of optimism and catastrophizing, with little evidence of detail, reflection on which highlights the potentially ideological nature of the arguments being formulated.

At the same time, De Miranda and Kristiansen (2012) suggest that responsibility for these changes were being entrusted to “the private sector and market forces” (p. 4) with the role of government being to facilitate this process. Furthermore, these changes were framed as inevitable and fast, pre-supposing the need for society to “adapt... as quickly as possible” (p. 5). Such an approach was largely cemented in already

mentioned Bangemann Report. Whilst this focus on the market was met with opposition by the “forces for social Europe” (De Miranda and Kristiansen, p. 2012, p. 1), these opposing factions are themselves criticised for having uncritically accepted the “technologically deterministic connotations” (p. 1) of the direction outlined in the policy documentation. In other words, whilst De Miranda and Kristiansen (2012) acknowledge the important role played by technology in the related economic and social changes, they suggest that failure to critique the nature of the discourse used in the policy at the time led to a preoccupation with “an information society for all” rather than, more directly, a “society for all” (p. 14). They suggest that technology was framed as the “master” of social need, rather than “a servant” (p. 14), claiming that this has led to the decrease in standards of living for less advantaged members of society, leading to an “increase in insecurity and social exclusion” (p.14).

Nivala’s (2009) review of policy focuses on domestic strategy papers relating to technology and education in Finland from 1994 to 2004. Taking an approach influenced by social constructivism and discourse analysis, Nivala (2009) identifies that, within these papers, accepted definitions of terminology around the “information society” are in fact vague and often poorly defined. For instance, there is an emphasis on the importance of “knowledge”, which is said to be “the basis of economic competitiveness and the welfare of society as a whole” (p. 439). However, there is little explanation of what this actually means or looks like, and there is similarly vague use of the terms such as data and information (p. 440). Again, there is a mobilisation of largely “deterministic discourses” (p. 443) around the implementation of ICT as a driver for progress which presents, arguably, “a simple answer to complex societal and educational problems” (p. 433). This deterministic approach combines both economic and technological factors, and it is reflected in a discourse that reduces the information society to a largely

economic concept. Nivala (2009) suggests that the alignment of technology and education with market forces has important implications as this has the potential to lead to the commodification of information and, in turn, an increase in inequality.

Whilst there is some evidence of alternative framings of the information society, with “innovation and creativity” (p. 440) appearing in one document as necessary components of an information society, these terms are equally poorly conceptualised and relatively sparse in their occurrence. Technology itself (as ICT) is positioned repeatedly as the most important factor in society, capable of creating and mediating knowledge whilst also being “key for social equality and citizens’ well-being and quality of life” (p. 440).

Nivala (2009) also suggests that another significant theme in the policy is that of “competence requirements” (p. 441) relating to the need for education to help develop skills. Here, education is seen both as something which can be enhanced by ICT (to “improve the quality of learning” p. 441), but also, predominantly, a factor that can help drive social progress through the delivery of ICT skills. Furthermore, this access to skills (and technology itself) are positioned as ways to “alleviate the complex problems of social exclusion and equality” (p. 442). As Nivala (2009) points out, such arguments only serve to simplify and distract from the more complex and nuanced social and economic factors that generate ingrained social inequality. Simply providing access to technology does not, in itself, result in the kind of “utopian” (p. 444) equality of access to education that is perhaps implied.

Berleur and Galand (2005) provide their own (predominantly critical) take on the EU discourse around the information society and “eEurope”, tracking the origins of these ideas by examining significant policy documents from 1999 - 2005. (These documents include The Bangemann Report (1994), An Information Society for All

(2000), eEurope 2002: Impacts and Priorities). They identify the dominance, particularly in the foundational stages of policy development, of discourse that draws upon the language of the “market” (p. 39). Whilst they acknowledge that the need for “socially inclusive” (p. 44) technology access is identified as a priority through these policies, they nevertheless suggest that (at least in 2005) the purpose of eEurope was to “improve the competitiveness of Europe” (p 48) rather than to promote “a more effective use of computers” as a result of “the improvement of education and skills” (p. 48). They conclude that, by 2005, the EU had “failed to formulate a clear political and citizen-oriented strategy” (p. 59), instead focusing on a “market-driven plan” (p. 50) that was merely “sprinkled” with “social and societal considerations”.

From a review of the above policy analyses it is clear that the critique provided by the earlier literature review largely plays out in the analysis of policy documents. That is to say that there is a reliance on the simplified and often ill-defined concept of the information society, an emphasis on technological determinism, the economy and the market and a simplification of the relationship between technology and social change. Whilst the papers outlined here are useful for providing a foundational picture, our concern is now with the more recent documentation.

PART 2

5. Responsible Research and Innovation in Horizon 2020: the case of gaming and gamification

Some have argued that the very existence of the EU’s Horizon 2020 research programme, which “places great emphasis on applied research with industrial partners” (Nieminen 2016, p. 23), contributes to the creation of “rationalities and interests external to the inner logics of scientific enterprise, as it is understood in the humanities and social sciences” (*ibid*, p. 23). This results in ICT being “applied to academia in

ways contrary to the creative autonomy that is at the core of all intellectual work" (p. 23).

This criticism notwithstanding, it is also important to note that Responsible Research and Innovation is a rather prominent aspect of the H2020 programme. Without doubt, these values exercised a growing influence in European policy circles over the past 20 years, to eventually become, with H2020, guiding principles drawn upon in an attempt to identify and possibly minimise the undesirable consequences of unchecked economic growth.

To be properly understood, these principles must be placed in a historical and epistemological context. They in fact originated as philosophical arguments grounded in a secular view of society, as opposed to more traditional religious positions often concerned with similar issues, but starting from different assumptions. In this sense, the work of the German philosopher Hans Jonas (1985) is often considered a seminal contribution that kick-started a typically continental strand of philosophy of ethics interested in the promises and risks of technological progress, rooted in the phenomenological and metaphysical traditions of Martin Heidegger and Immanuel Kant. The rise of Responsible Research and Innovation (RRI) as an “official” theme in EU policy, as well as the already cited work of Floridi on information ethics, are part of this trajectory (Dewandre, 2002; Floridi, 2013; Von Schomberg, 2013).

Setting off from these philosophical discussions, notions of social inclusion, gender representation and a concern for the societal and environmental impacts of technological innovation found their way into the flagship EU R&D programme. While these ideas were present in implicit form in previous rounds (e.g. Frameworks 6 and 7), they were more formally embedded in the strategic outlook with the eighth iteration: Horizon 2020. Here, a systematic consultation process with stakeholders and experts

led to a more explicit emphasis on R&D's "social mission", without lessening the commitment to entrepreneurship, market growth and innovation. In turn, this emphasis led to the identification of "Grand Challenges": policy priorities presented as major concerns "shared by citizens in Europe and elsewhere"²:

- Health, demographic change and well-being;
- Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the Bioeconomy;
- Secure, clean and efficient energy;
- Smart, green and integrated transport;
- Climate action, environment, resource efficiency and raw materials;
- Europe in a changing world - inclusive, innovative and reflective societies;
- Secure societies - protecting freedom and security of Europe and its citizens.

The emphasis on these Grand Challenges is the result of a policy process that culminated in the 2009 Lund Declaration³, which exercised a great influence on H2020's strategic vision. The Lund Declaration is generally credited with moving the European research and innovation agenda beyond rigid thematic distinctions, to focus on approaches that bring together public and private stakeholders.

As a result, the challenges became one of three "pillars"⁴ – the other two being Excellent Science and Industrial Leadership - meant to support research and innovation

² <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/societal-challenges>

³ The Lund Declaration – Europe must speed up solutions to tackle grand challenges through alignment, research, global cooperation and achieving impact:
<https://www.vr.se/download/18.43a2830b15168a067b9dac74/1454326776513/The+Lund+Declaration+2015.pdf>

⁴ http://europa.eu/rapid/press-release_MEMO-13-1085_en.htm

in Europe. Alongside the introduction of the societal challenges, the role of social responsibility was strengthened further with the so-called “cross-cutting actions”: priorities to be tackled across all pillars and expected to have an explicit focus on widening participation, gender, and sustainable development, often from a Social Sciences and Humanities (SSH) perspective.

These high-level strategic principles informed the more operational guidelines collected in the Work Programmes (the 2014/15 WP⁵, the 2016/17 WP⁶ and the forthcoming 2018/20 WP) where funding calls, actions, timeframes and indicative budget breakdowns are outlined. In the Work Programmes, specific areas of technological innovation are grouped under broader thematic areas, such as *Information and Communication Technologies* or *Health Demographic Change & Well-being*. For instance, themes of gamification, game-based learning and serious/applied games feature in a number of calls under *Content Technologies and Information Management* in the ICT component of the 2014-2015 WP, and under the similarly titled *Content* in the ICT component of the 2016/2017 WP.

Against this background, the questions that have informed the empirical work described in the remainder of this report are as follows:

How are RRI and ethical priorities actually represented in the official H2020 discourse? Do they signal a genuine attempt to embed social responsibility in the flagship European R&D programme? How are they reflected and accounted for in the specific area of gaming-related research and innovation?

⁵ https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/main/h2020-wp1415-leit-ict_en.pdf

⁶ http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-leit-ict_en.pdf

6. The dataset and the analytical process

In this section we provide a description of the data corpus, detailing the sources considered and the volume of data. The sample illustrated in Table 1 is representative but not statistically so – texts were chosen on the basis of their significance and profile, in an attempt to saturate the interpretative process.

The corpus size was therefore determined by convenience sampling and theoretical considerations (i.e. theoretical sampling - see Glaser and Strauss, 1970).

Source number	Document name	Description	Origin/Source	Word count
1	H2020_overarching strategy	H2020 Strategy document 1 - Horizon 2020 work programme 2018-2020 – Published in 2016. Working document describing the context for the entire strategic programming process. Although it does not have legal value (as opposed to the official work programme), the document provides essential insights into the policy themes that underpin Horizon 2020.	Online pdf	7757
2	H2020_in brief	H2020 Strategy document 2 – accessible, public facing outline of H2020 – published in 2014.	Online pdf	5362
3	H2020_Impact Assessment	H2020 Strategy document 3 - COMMISSION STAFF WORKING PAPER IMPACT ASSESSMENT - This Staff Working Document presents a preliminary impact assessment of H2020 – published 30.11.2011	Online pdf	26821
4	H2020_EU Parliament Communication	H2020 Strategy document 4 – This is the official communication from the Commission to the European Parliament - published 30.11.2011	Online pdf	5336
5	H2020 Calls	This is a small subset of the H2020 calls published in the 2014-2015 and the 2016-2017 Work Programmes. A search was carried out on 15th March 2017 on the EU Participant Portal using keywords such as games, digital games and gamification. This resulted in seven calls directly or indirectly related to games (e.g. one call is directly focused on gamification technologies, while others mention games/gamification as a possible area of focus for specific aspects of a proposal, e.g. to engage end-users). Calls were sourced from the H2020's ICT component, the <i>Health, Demographic Change</i>	Multiple online sources	3779

		<i>and Well-being component, and from the Mobility for Growth component.</i>		
Total words in corpus: 49055				

Table 1. Features of the textual dataset

The use of discourse analysis was supported by the software package for qualitative analysis Nvivo (Bazeley and Jackson, 2013). Nvivo allowed for the systematic organisation and the easy querying of the data, and provided a useful framework to enable collaborative coding involving two analysts. The two coders interacted to ensure the integrity and accuracy of the interpretations and claims. Both were involved in the repeated reading of the source documents in the Nvivo file, checking the “nodes” (Nvivo’s key collections of references about a specific theme).

This process involved reviewing the highlighted text in Nvivo for each node, firstly in isolation and then in the context of the whole document. This helped to ensure that the highlighted text accurately reflected the interpretations, and that the interpretations themselves were an accurate reflection of structure of each of the documents.

7. The broader context: actor analysis of strategic documents

In this section we will begin the transition from a surface-level description of how themes of Responsible Research and Innovation (RRI) are featured in the text to a discourse-analytic account, in order to tease out some of the underpinning factors. For reasons of scope and to ensure focus we chose to direct our analytical approach to how actors are represented across H2020’s three “thematic pillars”, examining how roles are realised linguistically, thus bringing into relief the underlying assumptions.

As such, the category “actors” subsumes themes which refer to whoever (or whatever) is given agency or is a recipient of agency in the text, that is, people or other entities having some kind of influence on processes and phenomena, or being shaped

and influenced by them. Actor analysis is a staple of Critical Discourse Analysis (Van Leuwen, 1996; Wodak 2001), particularly valuable during the initial stages of a project as it provides a compelling picture of “who’s who” in a text. However, when it comes to actors we should distinguish between two planes of representation: a self-referential one concerned with how individuals, groups or organisations construct and position themselves; and a hetero-referential plane concerned with how other social actors are constructed in the text.

In this study, we took advantage of the light-touch corpus analysis functionalities offered by the software package Nvivo, to carry out an actor analysis where quantitative information (word-frequency) meets hermeneutic probing. The following tables summarise descriptive word-frequency data, while also providing important information on how actor-related words are used in context.

Europe 195 instances - sample instances are below
Europe is beset by challenges.
Europe is now faced with a public debt crisis and fears of a new recession.
To be the best at what it does, Europe needs to invest in promising and strategic technologies, such as those used in advanced manufacturing and micro-electronics.
Europe is over-dependent on the rest of the globe for its energy – energy derived from fossil fuels that accelerate climate change. Challenges that threaten the future of Europe and individuals in large sectors of society.
Horizon 2020 is funding research on new strategies and governance structures to overcome prevailing economic instability and ensure Europe is resilient.
Excellent Science (...) will raise the level of excellence in Europe’s science base and ensure a steady stream of world-class research to secure Europe’s long-term competitiveness.

Table 2. Europe as an actor

Europe is by far the most prominent “actor” in the high-level strategic documents analysed. It is treated as a collective, ailing entity recovering from an

economic downturn, in need of strategies that will secure its long-term competitiveness while reinforcing the world-class status of its industries. The emphasis is mostly on the economic future of the continent and on decisive strategies for market consolidation and expansion. These themes largely underpin the “industrial leadership” pillar, in which “businesses set the agenda”.

In addition to Europe, Small and Medium Enterprises (SMEs) represent the second most prominent actor involved in the pursuit of industrial leadership.

SMEs (Small and Medium Enterprises) 92 instances -sample instances are below
SMEs have significant innovation potential and they have the agility to bring revolutionary technological breakthroughs and service innovation to the market.
(help) innovative SMEs to grow into world-leading companies.
Simplification will be of particular benefit to SMEs, as they often lack the resources to cope with high administrative burdens.
Pilot and market replication projects help European SMEs to partner, overcome market barriers, and position themselves successfully in the European market.
Highly innovative SMEs with the ambition to develop their growth potential.
Small and medium enterprises (SMEs) – a key source of jobs and innovation – receive special attention in Horizon 2020.
SMEs are particularly affected by the resulting barriers to programme application and participation (...) often unable by themselves to move along the complete innovation chain. The Horizon 2020 option consolidates and simplifies across programmes and initiatives, making proposal preparation and project participation less complex and costly, and lowering barriers to project participation in particular for SMEs.

Table 3. Small and Medium Enterprises as actors

The emphasis on SMEs is nothing new in European economic development strategies, as they ostensibly represent 99% of all businesses in Europe⁷. This may be due, partly, by the official definition of SME being rather broad: “(an SME is) any

⁷ http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_en

entity engaged in economic activity (...) which employs fewer than 250 persons (...) and which has an annual turnover not exceeding EUR 50 million"⁸. Their role in the high-level strategic documents is not only quantitatively prominent, but also noticeable for a clear positioning in the “industrial leadership” semiotic space: SMEs are represented as economic, market making actors with the ambition and the potential to grow, innovate and create jobs. At the same time, they are fragile entities and the worthy recipients of “special” care and attention, as they are particularly affected by barriers to participation, lack of resources and excessive complexity.

As we move down the frequency list we encounter the actors clearly associated, in semiotic terms, with the “excellent science” pillar: researchers.

Researchers 59 instances - sample instances are below
An inclusive approach (...) ensuring that excellent researchers and innovators from across Europe and beyond can and do participate.
The most talented and creative individuals.
The world’s best researchers.
Promoting the international mobility of researchers and innovation staff is crucial for enhancing this global cooperation.
Cross-border mobility and training actions are of critical importance for providing access to complementary knowledge, attracting young people into research, encouraging top researchers to come to Europe.
Encouraging top researchers to come to Europe, ensuring excellent skills for future generations of scientists, and improving career prospects for researchers in both public and private sectors.
networking and twinning schemes enhancing the connections between researchers and innovators in all Member States

⁸ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003H0361>

EU research and innovation programmes have succeeded in involving Europe's and indeed the world's best researchers and public and private institutes and produced large-scale structuring effects, scientific, technological and innovation impacts, micro-economic benefits, and downstream macro-economic, social and environmental impacts.

Table 4. "World-leading scientists" as actors

In this context, the word researcher refers exclusively to science and engineering research. Moreover, the emphasis is not on researchers as a broad, inclusive category, but rather on the “the best” and the “world-leading” ones who generate economic and societal impacts through talent and ingenuity. International mobility appears to be an important component of scientific work in H2020, enabling cooperation, knowledge transfer and increasing the attractiveness of Europe as the preferred destination for excellent scientists. It is hardly surprising that scientists are given such a prominent role as catalysts of change in a programme so heavily focused on “R&D”.

What is interesting is the type of rationality being implied in the text. By depicting researchers as competitive, scientific overachievers, and as members of an internationally mobile intellectual workforce in the service of “large scale structuring impacts”, the H2020 discourse produces a limited, individualistic (possibly gendered) representation of the nature of scientific work – one that foregrounds rational and benefit-maximising dispositions, while downplaying the uncertainties and the “messiness” that often accompany scientific work (Latour, 1987). Some critical observers might be led to question how gender equality and widening participation in science – those cross-cutting RRI priorities mentioned earlier – can be reconciled with such a narrow representation.

The analysis of the actors associated with the third and final pillar (societal challenges) brings us to the twin categories of citizens and society, often occurring in close proximity to each other and mostly in relation to themes of social responsibility

and ethical frameworks. What is immediately striking is how less prominent these actors are in the text, compared to the previous ones. Nonetheless, the very presence of these referents, “citizens” in particular, signals an attempt to moderate the market-oriented and rationalistic tone adopted in connection with the other pillars.

Citizens (24 instances) Society (27 instances) – sample instances are below
Citizens will need social protection.
It should be understood that a model that is at once sustainable, inclusive and smart will not depend solely on S&T (Science and Technology) but also on governance and on the involvement of the citizens who will make up our society – and shape it. A shift towards "the demand side" together with users" (and more broadly citizens") involvement is not only a prerequisite for more robust and flourishing technologies; it is also a prerequisite for more robust and flourishing societies.
European citizens are affected across a range of issues: they require and expect high quality health care and solutions to fatal and debilitating illnesses; they hope that science and innovation can tackle problems such as climate change, clean energy, clean transport, an ageing population.
Investment is focused on those activities and areas that have the greatest potential in terms of quickly improving the everyday lives of European citizens and maximising value for money.
Embedding SSH (Social Sciences and Humanities) research across Horizon 2020 is essential to maximise the returns to society from investment in science and technology.
Smart investment, notably in research and innovation, is vital in order to maintain high standards of living while dealing with pressing societal challenges such as climate change, an ageing population, or the move towards a more resource-efficient society.
The move towards a more resource-efficient society Horizon 2020 is, therefore, supporting projects that involve the citizen.
The objective will be to provide knowledge for the management of natural resources that achieves a sustainable balance between limited resources and the needs of society.

Table 5. *Citizens and Society as actors*

Citizens are the actors making up the broader collective body of society. As such, “citizens-in-society” are deployed in the text as part of a discursive strategy to expand the category of “users” of technological innovations, solutions and products. While their involvement is championed, citizens-in-society are at the same time positioned within a

deficit model that assumes a fairly passive role: they hope for science and technology to improve their lives, they need protection, they are “affected by issues”, and they are the recipients of improvement and efficiency actions where technology brings great, unquestioned benefits.

8. H2020 funding calls where games or gamification are primary or secondary aspects

In this section, the focus shifts from the strategic documents to a specific technological area (gaming), as represented in what we termed the “operationalisation” of H2020: the actual funding calls in the Work Programmes.

Throughout the empirical section of the report we transitioned gradually from a surface level description of RRI and ethics in H2020 (what is being said), to the analysis of how actors are represented and positioned across the H2020 thematic priorities, to finally get to this point, where we engage in a more granular examination of funding calls directly and indirectly concerned with gaming, serious games and gamification. We remind the reader that this analysis builds on the background work carried out for the first deliverable (D2.1), that is, the comprehensive literature review and, in particular, the sections concerned with the intersections between ethics and gaming research.

In that context, we noticed that while ethics in gaming is a fairly under-researched area, it is undeniably connected with a number of emerging debates about the relationships between games and human behaviour, or between games and social inequalities. We documented the recent interest in representation (of race, gender and broadly of a diverse range of identities and backgrounds) and ethical design, and the fact that the research and development communities are beginning to consider frameworks for ethical game design that may lay the basis for making ethics an integral

part of developer education and practice. Setting off from these premises, we went on to analyse how ethical and social responsibility aspects are represented in the flagship European R&D programme on gaming.

9. How are games and gamification represented in a subset of H2020 calls?

As mentioned in Section 6 (Dataset and analytical process), the funding calls considered in this study were selected because they were directly or indirectly related to gaming. Of these, two were explicitly concerned with gaming, while the others referred to gaming or game-based technologies as approaches to tackle particular challenges. Five calls were included in the *Information and Communication Technologies* Work Programme, one in the *Health, Demographic Change and Well-Being* WP, and one in the *Smart Transport/Mobility for Growth* WP. Further details about the calls are in Table 6.

H2020 calls directly related to gaming and gamification	
1	ICT-21-2014 - Advanced digital gaming/gamification technologies
2	ICT-24-2016: Gaming and gamification
H2020 Calls indirectly related to gaming and gamification	
3	ICT-20-2015: Technologies for better human learning and teaching
4	ICT-19-2015: Technologies for creative industries, social media and convergence
5	ICT-20-2017: Tools for smart digital content in the creative industries
6	PHC-26-2014: Self-management of health and disease: citizen engagement and mHealth
7	MG-4.5-2016: new ways of supporting development and implementation of neighbourhood-level and urban-district-level transport innovations

Table 6. H2020 calls directly or indirectly related to gaming

The main noticeable feature across all calls is that gaming, and associated notions such as game-based learning, gamification and serious games, were involved in the same semiotic tension, discussed in relation to the broader H2020 discourse, between economic benefits on the one hand, and social challenges and priorities on the

other. This tension is observable in the stark separation between entertainment and non-entertainment gaming contexts assumed in the call, which point to a process through which technologies and methods migrate from an industry sector focused on leisure, escapism and disposable time, to a more “serious”, socially acceptable sector.

The H2020 programme is positioned here as a market enabler, providing support for the creation of this emerging sector of “digital games and gamification mechanics applied in non-leisure contexts”. The following quote is particularly illustrative:

Excerpt 9.1: Digital games and gamification mechanics applied in non-leisure contexts is an important but scattered industry that can bring high pay-offs and lead to the emergence of a prospering market.

The emphasis is on technology transfer and the opportunity to achieve a more efficient, cost-effective market growth, whilst also delivering “substantial” benefits of a different order, i.e. not strictly economic but, for instance, in terms of social well-being. The call text also carries an assumption about the perceived costs of gaming technologies in the entertainment industry, highlighting the need for “mainstreaming” so that market expansion and social benefits can be delivered in other contexts.

Excerpt 9.2: The software games business is growing fast. Its technological and methodological underpinnings have been laid down in years of research and development. At a significantly lower scale, they are now finding their way into non-entertainment contexts, helping deliver substantial benefits, particularly in education, training, research and health.

Excerpt 9.3: To develop applied games more easily, faster and more cost-effectively. The challenge is to mainstream the application of

gaming technologies, design and aesthetics to non-leisure contexts, for social and economic benefits.

As part of this theme of transferability, game development is treated as a collection of tools and assets that can be packaged, moved and implemented as discrete components or units. These include things such as:

Excerpt 9.4: Game engines, emergent narrative, virtual characters, interaction systems and alternative human-machine interfaces, 3D, textures, models for simulations, game design, learner profiles, emotional models, etc.

Whether the call is directly or indirectly related to gaming, the common trait is an understanding of game design as “modular” - a notion according to which the process of making games is not much concerned with artistic design and creativity, but chiefly with matters of engineering, optimisation, implementation and costs. This is linked to an instrumental view that values games because they are “effective”, that is, have measurable effects on a range of outcomes and behaviours.

Excerpt 9.5: To increase the effectiveness of digital games for professionals and researchers, intermediaries and social actors dealing with people with disabilities or at risk of exclusion (socially, physically or technologically disadvantaged groups) and of those who consider themselves unsuited for education.

Excerpt 9.6: The creation of a supportive environment for healthy behaviour including support to behavioural change e.g., mathematical, dynamic modelling of behaviour with quantitative, testable models especially in real world settings and application of

the sciences in designing interventions or game-based physical training with motion tracking based feedback.

Games are represented as building blocks and parts of “ecosystems” or “environments”: a range of technological approaches that can - and must - be mobilised in order to achieve economic or social benefits. These discrete collections of tools should support, for example a “digital ecosystem for learning”.

Excerpt 9.7: A digital ecosystem for learning (including informal learning) that develops and integrates tools and systems that apply e.g. adaptive learning, augmented cognition technologies, affective learning, microlearning, game-based learning and/or virtual environments/virtual worlds to real-life learning situations.

As it is often the case with institutional discourse, what is foregrounded in a text provides an insight into what is omitted or missing. By emphasising a strong mechanistic, instrumental perspective on game development, the call texts show no appreciation for the expressive, cultural and aesthetic dimensions of game development and gameplay, both seen as cultural practices situated in contexts, mediated by shared conventions, ideologies and politics. We will now consider the structural aspects of the call texts, examining how themes of ethics and social responsibility are featured, and discussing their (limited) discursive purpose.

10. Analysis of “moves” in the subset of H2020 calls

In this section, we treat the funding call as a genre. In linguistics and discourse analysis, genres are relatively formal collections of writing or speaking conventions that constitute (and are constituted by) interactions, expectations and linguistic structures - often in specific institutional settings (Swales 1990). Examples are the grant proposal,

the job application letter, the journalistic article, the research paper, and so forth.

According to Fairclough (2003), “genres are important in sustaining the institutional structure of contemporary society” (...) (p.32), and are implicated in explicit and implicit forms of governance, that is, they are deployed as part of cultural activities aimed at “regulating or managing social life” (ibid).

Alongside governance genres, Fairclough and others (Wernick, 1991) also describe promotional genres, deployed to sell material or immaterial (symbolic) commodities, organizational values and individuals. The promotional genre has become so pervasive that it is now colonizing and influencing other genres and their associated domains, as all facets of the social world become increasingly shaped by the rules of the market.

Genres and their textual manifestations can be subjected to critical analysis, focusing on the stylistic, structural (e.g. grammar and syntax) and semiotic aspects to make inferences about the social contexts in which texts were produced: values, cultural assumptions and biases (Halliday, 1994; Hyland, 2002).

According to Hyland (2002):

Genres are abstract, socially recognized ways of using language.

Genre analysis is based on two central assumptions: that the features of a familiar group of texts depend on the social context of their creation and use, and that those features can be described in a way that relates a text to others like it and to the choices and constraints acting on text producers. (p. 114).

The key conceptual and methodological rationale underpinning such view is that society and language are in a mutually constructive relationship, and the way people use language for specific purposes is tied to how social life is

organized. In this regard, we follow Norman Fairclough (2003) in embracing a moderate version of social constructivism, trying to avoid extreme version of social and a-historical relativism whereby the social world is entirely defined by discourse. In particular, we adopt an approach called “move analysis” which has been defined (and refined over several years and in a number of studies) in genre and discourse studies (e.g. Connor and Mauranen, 1999).

The notion of move was initially theorised and empirically analysed by Swales (1990). Moves can be described as relatively stable functional units, used to convey meanings in an institutionally-sanctioned way, and to position the text and its author/s ideologically and rhetorically, for instance in terms of allegiances, authority and legitimacy. Moves may have many possible purposes, but they all display a degree of structural and linguistic coherence.

Moves need to be recognized before they can be subjected to interpretive analyses that target certain aspects of a text, in order to infer something about the sociocultural contexts and the actors linked to that text. This process of recognition generally focuses on two categories of textual feature: the communicative purpose of specific subsections (e.g. paragraphs) and the “linguistic boundaries” between those subsections (headings, indents, adverbs, punctuation or any other way a text can be structured).

In the data considered here, this meant paying attention to the following aspects:

- a) The degree to which the text shows consistency with what one would expect from an institutional funding call. Funding calls are widespread tools that outline quality or compliance criteria to access research funding. A number of

recurring features characterise these calls: expectations of impact, effects evaluation criteria, a tendency to position the call and the underpinning institutional context through an aspirational discourse that emphasizes quality, research excellence, world-leading innovation, and so forth.

- b) The actual structure of the call, which follows a recognisable pattern based on sections and headings, as they are expressed through those “text division devices” or “linguistic boundaries” mentioned earlier.
- c) At a more granular level, moves were identified by focusing on stylistic and syntactical features, examining for instance the rhetorical construction of sentences and verbs, in particular the use of deontic expressions (“proposals should...”) which convey prescriptive information about the types of proposals likely to be successful.

Move 1: Challenge or need definition. This move is articulated in the very first paragraph of each call, always indicated by the use of a “Specific Challenge” subheading. This introductory paragraph’s purpose is to outline a problem to which technology is invariably positioned as an innovative solution – one capable of providing, for example “new ways to educate and learn”, “new methodologies and tools to produce, apply and use digital games” and “new user experiences”.

Focusing more closely on the construction of sentences, this emphasis on innovation and novelty appears invariably contained in the characteristic tension of EU funding between market focus and social responsibility: innovation for economic growth and, simultaneously, for societal impacts. This move is therefore a balancing act, realised linguistically by the way clauses are connected (for example the adverb “also”). For instance, the first clause may introduce the need to boost market and innovation, the

second one either reiterates, and intensifies, the focus on market and innovation - often mentioning a subcomponent - or introduces social benefits and ethical considerations.

There are cases in which this relationship is inverted, that is, social aspects and benefits are introduced first, followed by economic advantages. The variations observed in the text are as follows:

(1) Boost market and innovation “in general” + specific market/innovation benefit

research and innovation is needed in a particular area to increase market size, to meet market demand, to enable consumption, to remain competitive, but also to achieve some more specific market benefit. Examples are as follows:

Excerpt 10.1: The development and integration of robust and fit-for-purpose digital technologies for learning are crucial to boost the market for and innovation in educational technologies. This requires an industry-led approach in close cooperation with academia to defining the frameworks and interoperability requirements for the building blocks of a digital ecosystem for learning (including informal learning) that develops and integrates tools and systems that apply e.g. adaptive learning, augmented cognition technologies, affective learning, microlearning, game-based learning and/or virtual environments/virtual worlds to real-life learning situations.

This challenge also encourages public procurement of innovative solutions to address the needs of the digital learning ecosystem in making better use of educational cloud solutions, mobile technology, learning analytics and big data, and to facilitate the use, re-use and

creation of learning material and new ways to educate and learn online.

Excerpt 10.2: The demand is growing for high-quality content and new user experiences. At the same time, thanks to ubiquitous technology adoption, widespread use of mobile devices, broadband internet penetration and increasing computing power the consumption of content anywhere, anytime and on any device is becoming a reality. Consequently, developments related to content creation, access, retrieval and interaction offer a number of opportunities and challenges, also for the creative and media industries. In order to keep pace with the trends and remain competitive, those industries need to explore new ways of creating and accessing content. The opportunity to establish new forms of content and user engagement could be transformative to many businesses in creative and media industries.

(2) Boost market and innovation + social benefits

Research and innovation will support struggling markets but they can also bring life-changing benefits for traditionally excluded groups:

Excerpt 10.3: Digital games and gamification mechanics applied in non-leisure contexts is an important but scattered industry that can bring high pay-offs and lead to the emergence of a prospering market. Digital games can also make a real change in the life of a large number of targeted excluded groups, enhancing their better integration in society. This requires however the development of

new methodologies and tools to produce, apply and use digital games and gamification techniques in non-leisure contexts, as well as building scientific evidence on their benefits - for governments, enterprises and individuals.

(3) Social Benefits + boost market and innovation

Research and innovation have immediate and undeniable social benefits, which also lead to market growth and efficiency, such as “empowerment” and “independent living” leading to scalability and cost savings:

Excerpt 10.4: Empowering citizens to manage their own health and disease will result in more cost-effective healthcare systems by improving utilisation of healthcare, enabling the management of chronic diseases outside institutions, improving health outcomes, and by encouraging healthy citizens to remain so. Several clinical situations would be prevented or better monitored and managed with the participation of the patient him or herself. Care sciences may complement the medical perspective without increasing the cost.

Excerpt 10.5: Citizens in an ageing European population are at greater risk of cognitive impairment, frailty and social exclusion with considerable negative consequences for their independence, quality of life, that of those who care for them, and for the sustainability of health and care systems. The challenge is to deploy innovative and user led ICT pilot projects in support of independent living with cognitive impairments and translate promising results into scalable practice across Europe.

Move 2: scoping. This is the central section of the call which outlines the specific nature, and indeed the scope, of the projects likely to be funded. Again, this is indicated by a subheading: “Scope”. Linguistically, this section is characterised by the predominance of deontic expressions that indicate how the proposed research ought to be, against the backdrop of institutional expectations and criteria. This translates, for most calls, in a clear distinction between “Research and Innovation Actions” (RIAs) that should focus on experimentation, capacity building and industry collaboration, and “Innovation Actions” (IAs) that should instead focus on coordinating large scale pilots, removing barriers to the diffusion of innovations (e.g. regulations), encouraging technology adoption and maximizing impact for specific user groups.

Comparatively, this section is meant to provide a more restrictive set of guidelines and specifications. Stylistically, the text appears indebted to a particular type of corporate literature that emphasizes technical compliance, engineering terminology and, broadly, economic rationality: technical specification documents, marketing briefs, industry-specific manufacturing and development standards, and so forth. This is reflected in the choice of words and expressions: viable business and financing models, standardization, development of joint specifications, complex integration, and so forth. The way the word “gender” is featured in this section is particularly telling.

In discourse analysis, the way information is presented in a text and the prominence given to certain aspects over others can be scrutinised to infer underlying cultural assumptions. Particularly illustrative in this respect is the recurrent references to gender and ethical issues (“cross-cutting” priorities in the H2020 programme) in the very final sentence of the scoping sections.

A clear contrast can be observed here between the more developed set of expectations and criteria outlined up to this point, and a range of short, vaguely defined mentions to the importance of ethics and gender. In the following extract, the first part of the scoping section provides a great deal of information outlining expectations and criteria, with specific references to detailed aspects of design, testing in real-life user scenarios, implementation and cost-effectiveness.

Compare this with the very last sentence recommending that ethical and gender issues should be considered, while failing to provide a commensurate level of clarity as to what criteria and guiding principles should inform the “taking into consideration” of those issues. One could argue that such scant references simply imply that research processes need to consider ethics and gender, for instance in terms of informed consent and composition of research teams, rather than ethical considerations being actually embedded, by design, in the project outcomes.

Excerpt 10.6: The proposed tools should explore the potential of technology to enhance the human creative process from the expression of ideas to experiment solutions. Where possible, collaboration and user-community interaction should be improved based on research leading to a deeper understanding of the dynamics of co-creative processes. The tools should be cost effective, intuitive, and be demonstrated in real-life environments relevant for the creative industries (such as advertising, architecture, arts, design, fashion, films, music, publishing, video games, TV and radio). Pilots should build on common, flexible and open ICT solutions which can

be adapted to specific users’ needs, allowing them to live independently for longer while experiencing cognitive impairment.

Pilot deployment across Europe should develop best-practice and viable business and financing models, as well as evidence for potential return on investment. Gender and ethical issues should be paid due attention.

A similar structure can be observed in other calls.

Excerpt 10.7: (Projects) should combine different technologies (e.g. mobile, augmented reality, natural interaction technologies) and support composing, re-using and distributing interactive educational content and services, with assessment and feedback functionalities.

Based on technological advances enabled by research carried out so far, activities will support networking, capacity building and experimentations in methodologies and tools for data-driven, (including automated measurement of human-system interaction) non-linear approaches to adaptive learning and remediation technologies and cognitive artefacts (including toys) for effective and efficient human learning. Gender differences in ICT-based learning attitudes should be considered.

The way “gender” and “ethics” feature in the calls paints a semiotic picture where meanings associated with innovation, technical implementation and measurable benefits are foregrounded at the expense of considerations of a more socio-cultural nature.

Across the seven calls considered, references to ethics and gender range from a maximum of a handful of words:

Excerpt 10.8: Implementation of programs or applications for different target populations to capture gender- and age-dependent differences in health, behaviour and handling of devices should be included.

To a minimum represented by a laconic single word (“Gender”), named as a cross-cutting priority.

Move 3: expected impacts. Extremely succinct mentions to “cross-cutting social issues” are also included in the third and final move, recognisable in the text thanks to another clear demarcation. This final section provides once more an indication of what is prioritised and valuable, and this information is handily represented in the text itself as lists. A selection of impacts is reported below:

Excerpt 10.9: Reinforce European leadership in adaptive learning technologies for the personalisation of learning experiences. This must be measured by the number of excellence centres collaborating through specific joint research experimentations and technology transfers programmes.

Excerpt 10.10: Enable faster ways of testing fundamental business hypothesis.

Excerpt 10.11: Facilitate the emergence of new innovative businesses.

Excerpt 10.12: Speed up the rate of adoption of technologies.

Excerpt 10.13: Validate novel ICT technologies.

Excerpt 10.13: Develop of new services.

Excerpt 10.14: (Develop) best practice for viable business and financing models.

Excerpt 10.15: Actions will lead to new innovation processes, new organisational and governance concepts, changes in planning processes, that result in new forms of urban mobility solutions at neighbourhood or urban district level.

Again, cross-cutting priorities (social aspects, such as gender and ethics) can be found at the bottom of each list. The notion of impact that transpires from these, rather brief, impact sections is consistent, in style and content, with the text up to this point. As such, the impact move in each of the funding calls serves a clear function: to provide a closing set of statements that unequivocally tie the likelihood of receiving funding to economic and innovation-related criteria.

11. Concluding remarks

Gaming Horizons aims to expand the research and innovation agenda on gaming and gamification, working towards the definition of socially responsible and ethical frameworks that can inform the development and the use of games in society.

During the current, initial phase of the project, we have examined critically the current landscape, focusing on the state of the art in empirical research in the first public deliverable (D2.1), and on the policy and funding context in the present one. The first phase will pave the way for a process of consultation and public engagement in the second phase, in order to produce compendia of practical advice and recommendations that we call “scenarios”. We hope that these scenarios will inform a socially responsible approach to funding, researching and developing video games and gaming-related tools to

benefit a wide range of domains: education, public health, culture and the arts, and others.

In this report we described a study where discourse analysis was applied to official policy documents and funding calls concerned with Horizon 2020 (H2020), the flagship research and innovation programme from the European Commission. The focus on H2020 stems from the very nature of Gaming Horizons, which is positioned from the outset as a “sister project” that explores a particular area of technological innovation from a social sciences and humanities perspective, unpicking biases and assumptions that may undermine the pursuit of responsible and ethical goals.

As we set out to analyse the policy and funding context that surrounds gaming in Europe, it became clear that it was impossible to consider this particular area in terms of responsible research and innovation, without taking into account the broader context. Therefore, we proceeded by degrees, moving from a surface level description of RRI and ethics in H2020, to the analysis of how actors are represented and positioned across the H2020 thematic priorities, to finally shift our analytical focus to a more granular examination of funding calls directly and indirectly concerned with gaming, serious games and gamification.

We found that the introduction of a more explicit concern for responsible research and innovation in H2020, compared with previous framework programmes (FP6 and FP7), is visible, as these themes are given a significant amount of rhetorical prominence. The simple fact that words such as gender, ethics and social responsibility feature in the official discourse at all signals an important opening up to societal issues and an attempt to

integrate RRI in what remains a heavily technology-driven, market-orientated innovation programme. In other words, like its predecessors Horizon 2020 is firmly rooted in a market-oriented set of priorities and themes, and there appears to be a gap between the rhetorical treatment of themes of ethics and social sensibility in high-level strategic discourse, and their representation in the more operational accounts of the programme, and in the actual funding calls.

This strong strategic imprint along market growth lines must, of course, be put into perspective, as it is the direct result of a strong narrative that emphasises the faltering EU “growth machine” compared with its global competitors. This is documented in a number of policy documents and initiatives over the past decade (e.g. Montalvo et al., 2006; Veugelers et al., 2015)⁹.

To bring to a close this section we summarise again the main set of findings:

1. The economic anxiety of Europe, the protection and nurturing of Small and Medium Enterprises (SMEs) and the “excellent”, internationally mobile scientists are the main themes and actors in H2020. The programme speaks also to citizens and society at large, but in less eager and convincing terms, and assuming a condition of deficit and passivity.

⁹ European Commission: The European Research Area: New Perspectives, Green Paper, COM(2007) 161, Brussels 2007:

https://ec.europa.eu/research/era/pdf/era_gp_final_en.pdf

2. The secondary role of ethics and social responsibility becomes strikingly apparent in the funding calls, which fail to provide information as to how these notions are meant to be accounted for in projects and emphasising, by contrast, economic growth and innovation over everything else.
3. Gaming and gamification are treated, first and foremost, as emerging markets. Moreover, the official H2020 discourse emphasises a strong mechanistic, instrumental perspective of game development, and the call texts show no particular appreciation for the expressive, cultural and aesthetic dimensions associated with design and gameplay, viewed as cultural practices situated in contexts, mediated by shared conventions, ideologies and politics. It is worth noting, at this point, that this narrow understanding of gaming is a reoccurring finding in other empirical strands of this project. For instance, it is clearly emerging in our engagement with experts and developers, where we found evidence of seemingly irreconcilable understandings of gaming: as an expressive medium, as a neutral technological intervention, and as a modular set of tools and technologies. Across these distinctions, communities of developers and researchers position themselves in “camps” (e.g. a media-studies camp, an art & design camp and a computer science camp) with little communication between communities and, in fact, reinforcing artificial sectorial distinctions in the name of criteria such as seriousness, leisure or “applied”.

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