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Institute for Prospective Technological Studies  
**Information Society Unit**

## Digital Games for Empowerment and Inclusion (DGEI)

### **D3 Final Vision and Roadmap**

#### **A Roadmap for Action on Digital Games for Empowerment and Inclusion in Europe**

##### **A Report of the Study:**

##### **Exploring the Potential Impact of Digital Games for Empowerment of Groups at Risk of Social and Economic Exclusion: Opportunities, Challenges and Possible Actions: Digital Games for Empowerment and Inclusion (DGEI)**

##### **AA INFSO/SMART 2011/0054 – JRC 32397-2011**

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This document is based on the work conducted as part of the DGEI project – Digital Games for Empowerment and Inclusion (AA INFSO/SMART 2011/0054 – JRC 32397-2011) and it integrates the main inputs gathered through consultations with Experts, Policy Officers and Stakeholders during the implementation of the project, and in particular the summary of discussion and recommendations from the Stakeholders' Workshop drafted by Mr. Jan Gejel, who acted as Rapporteur for the meeting.

*Disclaimer: The views expressed in this document are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission.*

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For more information about the DGEI Project visit: <http://is.jrc.es/pages/EAP/eInclusion/games.html>

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# 1 Introduction: Policy Context and Research Background

Over 100 million Europeans are at risk of social and economic exclusion: that is suffering from multiple deprivations, such as to low income or precarious employment, low educational attainment, discrimination, disability, poor health or isolation from their local community. The economic crisis is exacerbating this phenomenon, affecting many of the most vulnerable and disadvantaged groups in the European society.

While European policy makers are promoting structural changes, addressing issues such as employment and growth, education, equity, health and care services, many individuals, families and communities need support to face their particular needs: they call for being empowered so to find their own path to regain socio-economic inclusion. Empowerment could enable them to regain self-confidence after losing a job, re-engage with learning and build the skills and the social support networks necessary to take control of their lives, or to cope with a disadvantaged condition or health problem. Communities need support to address issues of discrimination, violence and extremism, and to reinforce social solidarity.

Public services and the third sector provide this support, but often do not succeed in reaching the most vulnerable. For example, young people from deprived backgrounds who are not engaged by formal schooling fail to gain the qualifications to work and study, and consequently may fall in to unemployment and social and economic exclusion. There is a serious need for new approaches to empowerment and inclusion that are effective and cost effective to tackle a major social and economic challenge of today's Information Society.

In the 21<sup>st</sup> century, where Information and Communication Technologies (ICTs) are pervasive, and are changing the way we work, consume, and live, those who address the needs of the most vulnerable are finding new ways to do this through the use of tools of contemporary culture. Among the approaches that these inclusion intermediaries, such as schools, youth and health services are exploring, is the use of Digital Games. This may seem a surprising approach, but it follows over a decade of research and development of the use of games by the military, in corporate training and in advertising and communication, areas where being able to tap into the power of computer simulations, the intrinsic motivation of gameplay, and the ubiquity of mobile phones and social network platforms is starting to make a commercial impact as well as paving the way for contributing addressing a whole range of societal challenges.

In order to better understand the opportunities and challenges of Digital Games for individual and community empowerment, and as a tool for socio-economic inclusion of people at risk of exclusion, the JRC-IPTS and DG-CNECT conducted the exploratory research DGEI – Digital Games for Empowerment and Inclusion.

The DGEI Roadmap for Action is the result, based on an in-depth analysis of the state of the art and case studies presented in the JRC-IPTS report on Potential of Digital Games for Empowerment and Social Inclusion<sup>1</sup>, and consultations with experts, policy officers and stakeholders. In particular, the consultation process served to define the priorities for research and policy options to be implemented in the short and medium term, so to maximize the potential of Digital Games for Empowerment and Inclusion and to address the challenges identified in research and practice.

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<sup>1</sup> The final version of the report **The Potential of Digital Games for Empowerment and Social Inclusion of Groups at Risk of Social and Economic Exclusion: Evidence and Opportunity for Policy** is under finalization and it will be made available soon on the DGEI Project's website.

The DGEI Roadmap for Action is presented as follows: Section 2 presents a vision for DGEI 2030; Section 3 discusses the challenges to fulfilling this vision, both analyses based on the DGEI study and stakeholders' consultation. Section 4 presents the strategic areas and priority actions identified as part of the Roadmap. Section 5 provides some indications on the way forward.

## **2 The Opportunity for Europe**

The recommendations of the workshops and the evidence gathered through the DGEI study have been used to outline a vision of how the use of Digital Games for Empowerment and Inclusion could contribute positively to development of the European society and economy in the future, with a time horizon of 2030,

### **2.1 The DGEI Vision 2030**

The rapid development and uptake of interactive media that merges social media, online content and digital gaming could bring us to a future where businesses regularly use products and techniques based on digital games to train employees, deliver services, and innovate. Public and social services could follow suit and employ sophisticated tools to create and deliver quality services that previously required huge investment and specialised skills. These new services would be available on computers, mobiles, consoles, tablets and multimedia television, devices that are already accessible today to large parts of the population and over 90% of young people of all social backgrounds in Europe. By 2030 the generation that grew up playing games will be reaching retirement: the whole population will be familiar with digital game playing.

In this future, the positive learning and participatory benefits of mainstream commercial videogames would be recognised and exploited in schools and families as a way to personalise and improve educational outcomes, develop new skills required for different ways of working, and build social support and self-confidence. The elements of games that help motivate people to change difficult behaviours and attitudes would be incorporated in everyday activities and mainstream programmes, speeding up learning and contributing people overcome difficulties and social challenges. Active inclusion policies supporting individual and community change could exploit this knowledge and technological supports to improve the effectiveness of interventions.

As well as a broad provision of online games to enable self-help, professionals, from teachers to doctors can incorporate a range of specially created games, apps, simulations and virtual world tools into their practice, making these tools available to individuals where they need them - through their mobile phone, at home, or at school. These products and services would be designed on the one hand to address facing challenging situations, and on the other, the needs and culture of target groups, such migrants, particular disadvantaged groups such as youth at risk of exclusion. As well as using special-purpose games, playful, creative and motivating learning techniques based on digital games ensure that young people would not be left behind by failing educational practices. Sometimes these may involve radically different learning methods and environments. Learning by games-making inspires and empowers young people with the technological, design and organisational skills associated with 'their' media, stimulating a new generation of skilled workers and entrepreneurs with skill applicable in many professions.

At the same time, increasing awareness of new markets and campaigning to make videogames accessible leads to the creation of engaging and accessible games which could enable everyone, young or old, with whatever capability, to enjoy and share the pleasures of play through digital games, increasing their self-esteem and active participation in an inclusive society.

Social innovation using games-based approaches would not only provide an opportunity to tackle issues of specific exclusion and empowerment, but could improve the quality of public services, avoiding the high costs of failure with existing approaches. The deployment of cost-effective games-based approaches in areas of public interest would create a demand for products and services provided by new businesses that could serve this emerging market. Europe, with the high value placed on social inclusion and education, and the presence of a strong local market and the availability of important resources in the cultural and creative sector could be leader in research and in the export of such products and services. It would compete not only in the field of empowerment and inclusion, but in a whole range of markets where high quality design and an innovative approach to behavioural change and pedagogy would be merged, contributing to improve economic and social conditions of each European.

## **2.2 Rationale underpinning the DGEI Vision**

The DGEI vision proposed above has been developed first by reviewing practice and research in the use of digital games, driven from the bottom up, and from a review of the trajectories of game culture technology and business. Over the last 10 years the scientific and practice community has produced evidence of the value of the broad use of digital games for instrumental purposes. Studies are now available documenting impacts on specific target groups or for particular purposes and policy areas, such as military and corporate training, education and learning, wellness and healthcare for instance.

However there are still considerable gaps in knowledge which make difficult to provide conclusive statements of the impact Digital Games can have in the extremely diverse field of social inclusion policy, which ranges from support for deprived communities, to the socio-economic inclusion of people at risk of exclusion (e.g. youth at risk, migrants, elderly, unemployed, low-educated).

The DGEI vision depicted describes an ideal world in which we could find ourselves about twenty years from now if, and only if, a number of conditions are realized. These conditions of course will only in part relate to the development of Digital games and DGEI in particular, as only the future will actually tell us if some elements of this vision are in part realised.

However, 'visioning' has an instrumental role in future-oriented technology studies, and each sentence and paragraph reflects an issue highlighted either through reviewing research and practice or emerged during discussions at the workshops conducted as part of the consultation process. The opportunities are constructed as cross-cutting issues, outlining how technologies, actors and knowledge could be brought together to deliver potential outcomes for particular targets groups and stakeholders.

This vision for DGEI in 2030 is set out as the basis for further defining the key strategic areas of action to be addressed so to achieve the potential opportunities identified and overcome the challenges identified.

## 2.3 Opportunities for Policy

The key opportunities today that have relevance for policy can be summarised as follows:

- The potential positive consequences for **employment and growth** derived from attracting, rewarding and sustaining innovation in the field of Digital Gaming in general, and Serious games in particular;
- The **social cohesion, individual and community empowerment** outcomes of the availability and use of Digital Games through appropriate application of digital game-based practices and products; and
- The contributions from digital gaming to the **effective provision of public services** meeting key public policy goals, such as education, health and social welfare.

## 3 Challenges to realising the vision

The DGEI study and the stakeholder workshop identified many challenges to the realisation of this vision. Through analysis and consultation these have been summarised as follows:

- **Low awareness and negative stereotypes:** Digital Games suffer from a range of negative image for much of the public, many policy makers and professionals in fields such as education, health and social care. Stories in the mainstream media are often negative, despite millions of people enjoying games everyday. There are perceptions that video games makes people, and especially young people, 'unsocial', less human, less empathic, and that they can even cause harm to children. The positive value of both entertainment games and specially made games is not widely recognised, and indeed the evidence of benefits may not yet be clear. The political discourse is often focused on 'time wasting', or on violence. In both the public and private sector organisations cultural barriers exist, especially with middle management who only see risks and problems in use of digital games, and do not support including games in programmes and organisational practices.
- **Lack of empowerment of inclusion intermediaries:** The value of DGEI is realised through professionals and organisations that address social inclusion (inclusion intermediaries), developing game-based approaches and incorporating them into professional practice where appropriate, either for individual cases, or at a more systemic level. However, several hurdles hinder realisation of this potential including the low awareness of the potential of games for inclusion and empowerment; the lack of training opportunities and access to appropriate market information and distribution channels, the lack of support services, resources and support development of communities of practice, and institutional, market and economic barriers to procurement of game service, products and skills.
- **Low quality and/or sustainability of game-based inclusion and empowerment projects:** Criticism has been made of many existing projects that aim to develop and introduce digital game-based approaches, particularly in the development of special-purpose games. For example research-led projects are one sided and answer research questions, but produce little lasting direct impact, and implementation projects that are meant to produce impact do not last past the initial funded stages without solid business plans. Products that are underfunded, or developed without the skill of game designers fail to capture the imagination of

users, and those developed without a good understanding of learning processes may fail to deliver intended outcomes effectively. Developers, sponsors and users need support to address crucial issues to ensure the quality of projects and any services or products that emerge from them, such as: user interest and resources; multi-stakeholder alignment and the role of innovation intermediaries; and a balanced assessment plan and management approaches, including marketing and sustainable business models.

- **Lack of impact assessment tools:** Progress towards individual or collective empowerment is complex, and digital game based-based approaches can address issues such as self-confidence, peer relationships and identity formation that can be difficult to assess with conventional approaches. There is a need to target the absence of standards and tools with for evaluation of the outcomes of digital-game approaches in informal, formal and/or non-formal learning contexts. To do this it is a better understanding of how these specific impacts are achieved using game-based approaches is also required.. These measures and standards are necessary both in everyday use, and in the processes of developing and testing new interventions, or use with different groups of users. Without the tools it is hard to develop the evidence for impact, to develop best practice, understand how to incorporate DGEI approaches into practice, and make the case for investment in DGEI.
- **Barriers to development of production and distribution of DGEI:** There is a relatively low level of awareness, expertise and investment in DGEI from the supply side, in particular for special purpose games. Stakeholders face a number of obstacles including: the costs of up-front development of digital games can be high and Digital game projects often stumble after the initial development phase. Game design and development for entertainment is not the same as developing games for DGEI. Tools, skills and accumulated practice need to be developed and made available. Developing products for new and relatively unknown user groups, requires the use of participatory design approaches (in which direct and indirect stakeholders are involved in game creation). Training for this needs incorporated in courses for aspiring game developers and designers and products need to be adapted to local markets, but flexible enough to reach European and global markets.
- **Limited knowledge areas of technology, use, impact, supply and innovation:** There are still many gaps in knowledge, and many potential avenues for research, and development. Gaps include the limited research which address the integration of game experience, usage and effects taking into account the diversity in gamer populations and practices, the limited research on developing technical tools to facilitate and improve development and distribution of digital games as well as investigation of policy and investment directions most suited to developing DGEI.
- **Low skill base of people trained in development and use of digital games:** DGEI research, practice and products cannot be developed or applied without people with appropriate skills and experience. Challenges industry and policy are to attract people to work on and with DGEI, and provide them with the necessary training. This requires measures to address 1. encourage the professional game developers and development companies to apply their expertise to problems of social inclusion and empowerment, 2. to the quality and breath of training available in tertiary and vocational education to inclusion professionals and developers, 3. the lack of specialised training and incentives for game developers and designs to work in fields of special purpose games, in particular on how to develop appropriate game

for and with vulnerable groups and those they support and the limited capacity of professionals working in social inclusion intermediary organisations to use game-based techniques.

### **3.1 From Challenges to Actions**

The Stakeholder Workshop considered these challenges in relation to their own activities, and prioritised actions that would 1. Raise awareness and tackle the negative images of games in general; 2. Address challenges in development and distribution of special-purpose games, primarily by 3. Unlocking demand by empowering inclusion intermediaries; 4. Develop impact assessment tools and provide evidence of outcomes and impact; and 5. Address the lack of skills of both professional users and developers;

In order to grasp the opportunities of Digital Games and exploit their potential, addressing and overcoming these challenges a number of key recommendations for action emerged from consultation workshops and from examining existing actions in the field. These included:

- Inform the general public, decision makers and politicians of the potential benefits of games and break existing stereotypes.
- Drive the development of innovative measurements of and standards for impact assessment for game-based approaches/projects for inclusion and empowerment
- Stimulate the development and distribution of DGEI, tackling demand and supply side challenges.
- Promote usage of games for the purpose of inclusion and empowerment among inclusion intermediary organizations.
- Develop the skill base of people trained in development and use of digital games.
- Support game-based inclusion and empowerment projects which meet certain defined requirements for success to ensure uptake of results and build sustainability.
- Support research in areas of technology, use, supply and innovation where there is limited knowledge, and introduce novel technologies to game platforms.

Based on this general set of actions, and the more specific discussions and recommendations of the Stakeholder workshop a Roadmap for action is developed in Section 2.

## **4 A blueprint DGEI Roadmap**

### **4.1 Strategic focus areas**

In this section the DGEI Roadmap for Action is presented, outlining the strategic areas of focus and the priority actions identified. These reflect the recommendations made by participants in the DGEI Policy and Stakeholders' workshops and are based on evidence made available through the review of the state of the art of research and practice in the domain.

The strategic focus areas underlying the DGEI Roadmap for Action are the following:

#### **1. EVIDENCE: Demonstrating impact through awareness raising and scientific evidence**

While for some the benefits of a game-based approach may appear obvious from first hand experience, in many cases there is still a low awareness of the potential of this approach and negative stereotypes, especially with regard to digital games prevail. This is also due to the fact that many knowledge gaps exist and there is a lack of evidence to show the positive impact of digital games, in general, and specifically to address 'serious' / applied policy issues.

The first challenge is therefore to raise awareness of the potential of digital games in general, and provide robust scientific evidence to support changing attitudes towards use of games in 'serious' contexts. For this to happen, there is scope for action to support ongoing research on digital games on the application of new technology in game-based approaches to address issues of interest for particular user domains, as well as reinforcing the assessment of impact, and the development of guidelines for exchanging good practices for digital game use with different target groups and in different settings.

#### **2. EMPOWERMENT: Empowering users through enhancing skills and institutional capacities**

For Digital Games to become an effective contribution to address socio-economic challenges it is required to reach a critical mass of users, though diversified according to the various target groups to be reached out and taking into consideration their peculiarities. The still limited usage of Digital Games for 'serious' purposes represents a crucial challenge for making the potential of DGEI become real. This needs not only the training of potential users belonging to disadvantaged groups, but development of specific game-based approaches to be included in professional training, for example of teachers, health or social care professionals. In this context, a pivotal role is played by intermediary organisations and institutions dedicated to address socio-economic challenges, including schools and public services having the responsibility for serving groups at risk of socio-economic exclusion and the most vulnerable people in society. At the same time, training of software and interactive media designers in the game design techniques needed by the specific context of use for addressing challenging and valuable societal issues is required.

#### **3. INNOVATION: increasing use and impact by bridging research and practice**

The potential of the digital games industry to provide innovative and cost-effective solutions in areas such as education and training as well as social inclusion and health care,

demands consideration of policy to facilitate the bridging between research and practice. However, the integration of research with production, distribution and use of Digital Games addressing socio-economic challenges and in support of disadvantaged groups is still very limited and it requires not only funding to research and development, but the creation of an 'ecosystem' where multidisciplinary research capacity can be put at disposal and linked directly with end users and their organizations. These should be included in the design and experimentation phases so to learn about and adopt while providing the insights needed to better address their problems. At the same time, issues related to procurement and standards should be addressed so to facilitate knowledge creation and exchange, and developing innovative business models. This shall ultimately increase the market uptake thus improving the competitiveness of the European industry in the domain.

## **4.2 Configuring Priority Actions**

In order to address the strategic areas of focus outlined above based on consultation with experts and stakeholders, the following priority actions have been identified. These actions are grouped according to one strategic area of focus, however the interdependence of the challenges identified in section 3 and the cross-cutting nature of each of the actions need to be highlighted, in the sense that each action can have effects on more than one challenge, thus requiring a systemic strategic approach in the implementation of the DGEI Roadmap. **Figure 1** presents the linkages between the challenges identified above and the actions presented here below. In particular, the priority actions identified are presented, describing the scope of the action, suggestions on how these could be implemented, the stakeholders to be involved and the proposed timeline. In this regard, it should be made clear that the timeframe proposed (short-term: 3-years up to 2015/6 and medium-term: up to 2020) refers to the timing when the specific actions should be initiated and a preliminary proposal of the minimum period of implementation, and thus when impacts should start to be felt from actions.

The timeframe for effective implementation will have to be considered case by case and according to the operational instruments that could be adopted. It will also require further analysis for operationalising each of the proposed actions. Finally, provided that all the suggested actions, or some of them, are implemented within the timeframe 2013-2020, an update of the Roadmap would be required to re-assess the situation and prepare the ground for new actions for the period 2020-2030.

## 1. EVIDENCE BUILDING AND AWARENESS RAISING

### a. Building scientific evidence of impact of DGEI

<b>WHAT</b>	Support an Europe-wide research to build scientific evidence of the impact of Digital Games in support of users' empowerment and socio-economic inclusion
<b>HOW</b>	Building on existing research, specific studies which demonstrate the impact of Digital Games in support of users' empowerment and socio-economic inclusion should be funded. These would gather evidence and identify good practices in exploiting digital games, and overcoming the barriers to implementation, as well as facilitating replicability and transferability. Positive results would underpin communication to professions, policy and the public on the value of digital games.
<b>WHO</b>	Research community jointly with industry and practitioners, supported by the Commission
<b>WHEN</b>	Short term (2013-2015)

### b. Raising general awareness and positive value of digital games

<b>WHAT</b>	Policy leadership to raise the profile of digital games including DGEI, and the digital game industry in the general population and among decision makers
<b>HOW</b>	Work with the industries, and through the media, to promote positive use of digital games, with cultural events around digital games, ministerial presence at industry events, supporting industry and cultural champions (game designers and business leaders and entrepreneurs). Share good practice on how to raise awareness and promote positive images of digital games. Support digital game champions at EU Member State level who will coordinate high profile events, such as festivals, exhibitions, competitions to change the image of games, and raise awareness of the diversity and value, and contribution of games to culture and the economy. High level initiatives, on the model of the US Government that identify and promote the positive use of games and the success of the game industry will provide important leadership throughout the public and private sector.
<b>WHO</b>	Commission, Member States, research community, associations of industry and practitioners
<b>WHEN</b>	Short term (2013-2016)

### c. Supporting the development of a DGEI research and practice community

<b>WHAT</b>	Develop an European community of research and practice to exchange knowledge and experiences on the use of DGEI
<b>HOW</b>	Building on the work of existing communities, such as the Network of Excellence supported by the Commission, and associations of industry and practitioners, support the development of an European community aiming at bridging research and practice and contributing to both making available evidence of impacts of the application of DGEI and raise awareness of the potential of DGEI to policy makers and society at large. This could include for instance the supporting of more 'prizes' for best DGEI applications and the organization of 'DGEI Apps development contests' among other activities. The community could be initially supported with funding from the

	Commission but in the medium term its self-sustainability should be ensured.
<b>WHO</b>	Research community jointly with industry and practitioners, supported by the Commission
<b>WHEN</b>	Short term (2013-2016)

#### **d. Promoting an Europe wide Communication campaign on the potential of DGEI**

<b>WHAT</b>	Support the organization of an Europe wide campaign to communicate the potential of DGEI specifically
<b>HOW</b>	The Commission jointly with Member States and with the support of the European community of research and practice (established according to action 1c) should promote the organization of an of a Europe wide campaign to communicate the potential of DGEI. This campaign may be structured around the proposal of having an 'European Year of Digital Games' and organize online and offline events throughout the duration of the selected European year. A key element in setting up and running the campaign will be the role of champions and leaders within sectors and at EU Member State level to raise awareness and promote good practice, following the model of 'Digital Champions' in e-inclusion policy. The existing Digital Champions can also be supported to promote the use of DGEI in einclusion contexts.
<b>WHO</b>	Commission, Member States, research community, associations of industry and practitioners
<b>WHEN</b>	Medium-Term (2016-2020)

#### **e. Stimulating the creation of DGEI Communities of Practice and Knowledge Exchange Hubs**

<b>WHAT</b>	Support the establishment of Communities of Practice and Knowledge Exchange Hubs to link all interested actors to contribute in a cross/fertilization ecosystem.
<b>HOW</b>	Supporting the creation of communities of digital game <i>use</i> as an alternative to the promotion of isolated game products is a crucial issue to be addressed. This will include sector-specific communities, focused on users, such as teachers and youth workers, and cross-sector and multi-disciplinary partnerships. These will not only focus the use and development of special purpose games, but also on game-making approaches and gamification of the educational and social settings. Funding schemes and actions must be able to embrace processes. These communities will be supported through funded projects to develop evaluation tools, exchange good practice. The communities will propose high profile demonstration projects in each sector that could be supported by the Commission, through funding 'pilot projects' and especially by Member States and industry with more dedicated funding programs. However, business models for sustaining in the long term such communities and the ecosystem within which they are placed should be defined so to ensure their long term sustainability.
<b>WHO</b>	Commission, Member States, research community, associations of industry and practitioners, intermediary organisations and sector professionals
<b>WHEN</b>	Medium-Term (2016-2020)

## 2. EMPOWERMENT, SKILLING AND INSTITUTIONAL CAPACITY BUILDING

### a. Promoting awareness basic skills and basic use of Digital Games

<b>WHAT</b>	Promote and support the use of Digital Games by inclusion intermediaries
<b>HOW</b>	Inclusion Intermediaries should inspired to break the resistance towards digital games, to appreciate the empowerment potentials for their target groups, and understand how they can start to use game-based approaches themselves. The Commission could support Member States to develop low-cost local and national demonstration and training sites to promote the use and creation of games in the target sectors. These sites will sites to demonstrate existing practice, provide basic training, and lend equipment and games. To support this, studies can more clearly identify the needs and concerns of user communities, as has been done for teachers, but which needs extended to other user groups. The Commission could support European networking on good practice in running these sites and the studies.
<b>WHO</b>	Commission, Member States, local and regional authorities, schools and educational institutions, research community, associations of industry and practitioners, intermediary organisations and sector professionals
<b>WHEN</b>	Short term (2013-2015)

### b. Engaging intermediaries and enhancing their capacities for DGEI use

<b>WHAT</b>	Extend the use of DGEI by intermediaries and support capacity building activities
<b>HOW</b>	Building on 2a, capacity building activities should address how inclusion intermediaries can include gaming and gamification more systematically in their practice. Local and regional authorities should development, promote and facilitate ' <i>real-world training programs</i> ' for continuing professional development, with participation of game developers, educational and social staff and researchers, not only on the use of off the shelf games, but more systematically on how to best select approaches according to needs and target groups, and reshape programmes around possibilities offered by games and other social media. This will require preparation of training courses, support material, of education and research establishments, supported nationally and at a European level. These will also require the development of more systematic support services, and the opening up of relationships with suppliers of services and products, taking down bureaucratic and commercial barriers, though changes in procurement and licencing procedures that act as barriers to DGEI, and establishing new commercial relationships.
<b>WHO</b>	Member States, local and regional authorities, schools and educational institutions, research community, associations of industry and practitioners, intermediary organisations and sector professionals, job placement agencies
<b>WHEN</b>	Medium-Term (2016-2020)

### c. Stimulating DGEI skills enhancement within professional education

<b>WHAT</b>	Promote the enhancement of skills for DGEI in view of future professions
<b>HOW</b>	<p>Training in appropriate use of game-based approaches should be incorporated into the initial training of new professionals working in areas where empowerment is important. (e.g. teachers, social workers, health staff, youth workers, community workers, etc.). This requires modules to be developed and training provided to educators, based on existing good practice. Indeed game-based approaches can be used in these educational programmes themselves.</p> <p>Educational programmes can be developed for new specialised job profiles supporting game use in practice, such as game designers working in educational institutions, and specialist trainers and developers of game-based approaches. Studies can more clearly identify these profiles.</p>
<b>WHO</b>	Member States, local and regional authorities, schools and educational institutions, research community, associations of industry and practitioners, intermediary organisations and sector professionals, job placement agencies
<b>WHEN</b>	Medium-Term (2016-2020)

### d. Supporting training and capacity building of DGEI developers

<b>WHAT</b>	Support the training of game developers and intermediaries so to unleash the future market potential and social benefits of DGEI
<b>HOW</b>	<p>Training for game developers is required, to ensure supply to the interactive media sector that will produce digital game products and services to emerging markets in special purpose games. This capacity can be developed through tertiary education.</p> <p>New and existing game developers and project managers also require education in complementary skills to work in teams the developing special purpose games and game-based practices for Empowerment and inclusion, an to run business supplying game products and services to user sectors. These skills often have to be developed in practice. Therefore, support measures to promote action-learning and multi-disciplinary training should be funded.</p> <p>Actions may also be needed to support investment in tools and equipment on the part of developers, where this equipment is necessary to produce products and services appropriate to emerging DGEI markets.</p>
<b>WHO</b>	Member States, local and regional authorities, schools and educational institutions, research community, associations of industry and practitioners, intermediary organisations and sector professionals, job placement agencies.
<b>WHEN</b>	Short term (2013-2016)

### e. Promoting DGEI adoption through integration into mainstream policies

<b>WHAT</b>	Integrate support measures for the adoption of DGEI into mainstream policies at EU and national level
<b>HOW</b>	The Commission could propose to integrate DGEI as a specific action line in the Europe 2020 strategy linking it to the different polices addressing social inclusion and empowerment (e.g. Digital Agenda, New Skills for New Jobs; Youth on the Move; Social Inclusion and Employment Packages, etc. ). Specific existing or foreseen funding measures should continue to supporting DGEI, including training and exchange schemes (e.g. Erasmus for All, European Social Fund); Research (Horizon 2020); deployment (Media and Culture programs; Active Citizens, Learning Communities and Inclusion programs; INTERREG; European Social Fund). In particular, it might be very

	valuable to consider introducing DGEI in the European Social Fund to allow more large-scale evidence on the impact of gaming for unemployed and other disadvantaged groups. Funding measures should take a holistic approach to DGEI, allowing empowerment (use) and game production activities within the same funding schemes. In addition to Commission funded measures, Member States through the planning of European Structural Funds and national and local funding programmes, should consider introducing DGEI as a specific focus of attention.
<b>WHO</b>	Commission, Member States, research community, associations of industry and practitioners
<b>WHEN</b>	Medium to Long Term (2016-)

### 3. UNLEASHING THE INNOVATION POTENTIAL OF DGEI

#### a. Supporting research and development for European DGEI

<b>WHAT</b>	Innovative funding of Research and Development for DGEI in Europe
<b>HOW</b>	<p>Stakeholders agree that DGEI is at a stage where research has a fundamental role to play producing new ideas, formalising knowledge and supporting use. Research needs a boost at European level and in global networks. However, traditional funding schemes for research may not be sufficient and innovative funding mechanisms are required. Support measures should include both funding on basic research on valid assessment of empowerment and inclusion processes enabled by DGEI; basic and applied research on ways to use game based approaches to tackle particular issues; research on game playing culture of target users and inclusion intermediaries; and cross cutting research on creating quality games at lower costs, including specialised development tools., including game design tools for non-professionals, methods for exploiting ethically data produced though DGEI use, and integration of games with delivery platforms suitable for DGEI uses.</p> <p>For this purpose, in addition to direct funding through EC funded programmes, the Commission should invite Member States to frame 'action research' activities in collaboration with research bodies, in which research is integrated in Digital Games practices at all levels, and especially in the specific target sectors relevant for empowerment and inclusion. Member States should also promote the establishment of small local as well as high-level national DGEI consortia, embracing policy-makers, game industry associations, intermediary institutions and end-users so to facilitate research participation in European communities of gaming.</p>
<b>WHO</b>	Commission, Member States, research community, associations of industry and practitioners, intermediary organisations and sector professionals, local and regional authorities
<b>WHEN</b>	Short term (2013-2015)

#### b. Promoting large scale DGEI research networks to assess impact and facilitate knowledge transfer in Europe

<b>WHAT</b>	Support large scale action research to assess the impact of Digital Game-based inclusion and empowerment processes in detail within long-term research schemes through developing indicators and assessment approaches able to embrace the potential impact of DGEI
<b>HOW</b>	Support a few 'large scale pilots' for action research, joining a rich diversity of Digital Games communities from research and practices, and relevant stakeholders. This should include designing the research structures and parameters along the processes

	and conduct research targeted at exploring, for instance: the empowerment and inclusion potential of commercial games; the learning potential of leisure game playing, and the different empowerment and inclusion results deriving from playing and developing games. These programmes should produce study results that have high impact outside research. This action research should be carried out by a large network of partners involving multi-disciplinary teams and being directly linked to the practice community and policy makers so to maximize its outreach and impact. An important component of this large scale pilot should be the capacity to codify knowledge and insights so to facilitate the transfer of knowledge across sectors and across Europe.
<b>WHO</b>	Commission, Member States, research community, associations of industry and practitioners, intermediary organisations and sector professionals, local and regional authorities
<b>WHEN</b>	Medium-Term (2016-2020)

### **c. Facilitating the creation of an enabling environment to support the production of DGEI**

<b>WHAT</b>	The existing development and potential for growth of DGEI demands the consideration of specific policy measures to support the emerging DGEI industries, both focuses on individual use sectors, and in cross-cutting services and technologies. This support, following the examples of the USA, Finland or France should include stimulating directly and indirectly regional industry specialization programmes focused on particular domains of use, the development of multi-sector regional centres of excellence across Europe and linkage with global markets and actors.
<b>HOW</b>	Member States should put DGEI and gamification in general high on national agendas and could provide direct and indirect financial support for the Digital Games industry, taking into account the differences between entertainment and special purpose games business models. This should include funding the creation of DGEI eco-systems, for example at regional level; support cross-sector partnerships at local, regional and national level and promoting the link between research institutes, SMEs and users. At European level the European Commission might wish to support the creation of a diversity of DGEI eco-systems across Europe. Regional ecosystems can be balanced against the establishment of powerful European research centres with expertise in special purpose games, in which research, game enterprises and user organizations partner up. The objective would be to boost the creation of a rich fund of DGEI eco-systems and gamification aiming to change user mentality in the educational, social and health sectors, as well as among public authorities. Some of this work should focus on the tools and platforms needed to ensure that DGEI is compliant with privacy and special needs of many DGEI environments, and on identifying, and creating,, if necessary, open consortia standards for open source and commercial development A special emphasis should be put on analysing issues related to procurement and standards so to facilitate knowledge creation and exchange, and developing innovative business models, and working with key market intermediaries to establish effective business models for the supply of DGEI products and service, particular to public services.
<b>WHO</b>	Commission, Member States, research community, associations of industry and practitioners, intermediary organisations and sector professionals, local and regional authorities.
<b>WHEN</b>	Medium-Term (2016-2020)

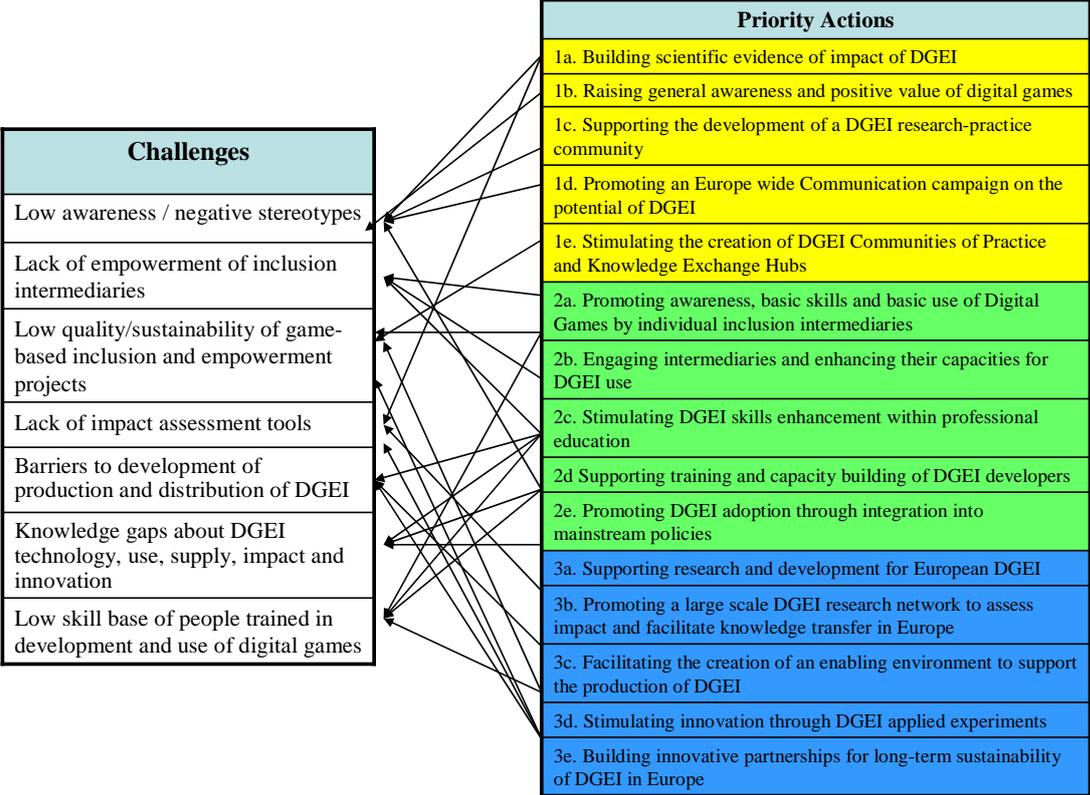
### **d. Stimulating innovation through DGEI applied experiments**

<b>WHAT</b>	Promote the flourishing of real life experiments of innovative Digital Game-based approaches
<b>HOW</b>	DGEI needs many more examples of use in practice. While commercial and research entrepreneurs are producing some examples, there needs to be a flourishing of real life experiments across Europe, by inclusion intermediaries, end users, and student innovators. This includes games for individuals, but also collective gaming and gamification – focused on communities of participants in physical locations. We are short of such practices and examples. Such initiatives might evidence very powerful social and learning outcomes, including intergenerational knowledge transfer. However such experiments carried out with real users in real settings and often carried out with minimal financing and expertise need access to support to understand how successes were achieved, and the actual outcomes and impacts, if they are to be developed further. This can be provided through regional and global Living Lab facilities. Such experiments involving diverse communities should link up with the increasing interest in developing learning communities and Smartcities, to develop local support infrastructures that enable user-creation of games and gamification projects. This also means that funding measures should include linking projects (such as social, health, environmental, etc.) to the establishing of social networks around the gaming activities and existing funding instruments and mainstream policy support programmes.
<b>WHO</b>	Commission, Member States, research community, associations of industry and practitioners, intermediary organisations and sector professionals, local and regional authorities
<b>WHEN</b>	Medium-Term (2016-2020)

#### **e. Building innovative partnerships for long-term sustainability of DGEI in Europe**

<b>WHAT</b>	Promoting the creation of an European Innovation Partnership on DGEI
<b>HOW</b>	Stakeholders agree that the emerging DGEI industries need support to gain foothold in emerging markets in Europe and globally. However, traditional support might not be feasible for generating growth of this industry as its growth potential is closely linked to new business models in which a myriad of developer SMEs are expected to partner up with a diversity of user organizations and users, and market intermediaries that ensure distribution and sustainability. Whereas national support might address direct or indirect financial support, for example including the establishment of incubators, European support might be linked to the creation of multi-disciplinary partnerships, partnering up with sectoral stakeholders and producing a rich diversity of “role-model” for Digital Games and gamification, thus helping boost the overall eco-system of Digital Games across Europe. This should involve the integration of funding measures for supporting Digital Games communities into already existing or planned programs (e.g. Horizon 2020 and the European Structural Funds), instead of isolating actions in separate “box-programs”. On the other side, however, a specific program addressing DGEI priorities directly should be established. This could include for example the proposal for an European Innovation Partnership (EIP) on DGEI.
<b>WHO</b>	Commission, Member States, research community, associations of industry and practitioners, intermediary organisations and sector professionals, local and regional authorities
<b>WHEN</b>	Medium to Long Term (2016-)

**Figure 1 Interdependence between DGEI challenges and Roadmap priority actions**



## **5 The Way Forward**

The DGEI Roadmap outlined above constitutes a proposal of priority actions emerged through consultations with stakeholders, experts and policy officers during the implementation of the DGEI exploratory research project.

The implementation of these actions in a holistic manner is expected to address the challenges identified and to contribute reaching the DGEI vision set out in this document, which has been developed in a collaborative fashion with key stakeholders, building on their insights and supported by evidence gathered throughout the research.

For this vision of the future to become true, a joined up approach is required involving the commitment of various levels of policy makers and the building of bridges in research, practice, education and industry. Thanks to the efforts of researchers, practitioners and developers over the last 10 years some current practices can be generalised already with both public and private investment. However new, more focused and integrated efforts are needed to have significant impact over the next 10-20 years.

Figure 2 presents in a simple graphical manner the blueprint for a DGEI Roadmap outlining the priority actions and the timeline of their execution, bearing in mind that, as indicated above, the timeframe proposed refers to the start-up of the actions and the suggested minimum period of implementation. A detailed assessment would be however required for each action during the planning phase, according to resources available, stakeholders involved and operational instruments adopted. Some stakeholders already have actions in these areas. The points at which EC policy makers could take action are indicated on each timeline.

This blueprint for a Roadmap is intended to provide indications on possible future directions to be taken. In practice a Roadmap requires active negotiation by stakeholders and commitment to alignment of actions at certain dates in the future. This document can however provide a starting point for this planning and negotiations, which require leadership and support, a potential role that the European Commission could take.

**Figure 2 A Blueprint for a DGEI Roadmap for Action**

Action	Timeframe							
	2013	2014	2015	2016	2017	2018	2019	2020
1a. Building scientific evidence of impact of DGEI	Blue	Grey	Grey	White	White	White	White	White
1b. Raising general awareness and positive value of digital games	Grey	Blue	Grey	Grey	Grey	White	White	White
1c. Supporting the development of a DGEI research-practice community	White	Grey	Blue	Grey	Grey	Grey	White	White
1d. Promoting an Europe wide Communication campaign on the potential of DGEI	White	White	White	Grey	Blue	Grey	Grey	Grey
1e. Stimulating the creation of DGEI Communities of Practice and Knowledge Exchange Hubs	White	White	Grey	Blue	Grey	Grey	Grey	Grey
2a. Promoting awareness basic skills and basic use of Digital Games	Blue	Grey	Grey	White	White	White	White	White
2b. Engaging intermediaries and enhancing their capacities for DGEI use	White	Grey	Blue	Grey	Grey	White	White	White
2c. Stimulating DGEI skills enhancement within professional education	White	White	White	Grey	Blue	Grey	Grey	Grey
2d Supporting training and capacity building of DGEI developers	White	White	Grey	Blue	Grey	Grey	Grey	Grey
2e. Promoting DGEI adoption through integration into mainstream policies	White	White	White	Blue	Grey	Grey	Grey	Grey
3a. Supporting research and development for European DGEI	Blue	Grey	Grey	Grey	White	White	White	White
3b. Promoting a large scale DGEI research network	White	White	Blue	Grey	Grey	Grey	Grey	White
3c. Facilitating the creation of an enabling environment to support the production of DGEI	White	White	Blue	Grey	Grey	Grey	Grey	Grey
3d. Stimulating innovation through DGEI applied experiments	White	White	White	Blue	Grey	Grey	Grey	Grey
3e. Building innovative partnerships for long-term sustainability of DGEI in Europe	White	White	White	Grey	Grey	Grey	Blue	Grey

**Key**

Strategic Focus Area 1: EVIDENCE	Yellow
Strategic Focus Area 2: EMPOWERMENT	Green
Strategic Focus Area 3: INNOVATION	Cyan
EC Policy Decisions	Blue
Implementation period by all stakeholders	Grey