Co-creation in serious digital game development: innovation and participatory method for entertainment-education

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Abstract

This research proposes to investigate the contribution that innovative development projects involving digital games can make to the field of entertainment-education (EE), which has been considered as a communication strategy falling under the media for development approach in the broader field of communication for development (Manyozo, 2012). Studies have shown that EE scholarship and practice is largely rooted in theories of individual behaviour change, but also that new theoretical perspectives deriving from participatory and empowering, as well as cultural approaches to communication are emerging in the field. The prevalence of innovation and of the application of EE principles to new mediums like digital games has also been brought to light (Obregon & Tufte, 2014). Digital games as a vehicle for EE have been analysed through the concept of serious games, or games with a utilitarian purpose, and from a behaviour change perspective (Wang & Singhal, 2009). The present research project aimed at reflecting on serious games and EE from a new perspective through the notion of innovation, and was conducted by means of exploratory and comparative qualitative case study. Findings show that innovation is closely associated with the notions of co-creation and participation. By focusing on a participatory approach to game design, innovative development projects involving digital games fit predominantly in emergent theories in EE, and combine elements of multiple approaches to communication for development, not principally the media for development approach.
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1. Introduction

This research aims at exploring the contribution that innovative development projects involving digital games can make to the field of entertainment-education (EE), which has emerged as a communication subdiscipline (Sood et al., 2017), and has been discussed as a communication strategy within the broader field of communication for development (C4D). In C4D, Manyozo (2012) distinguishes three approaches: media development, participatory and community communication, and media for development (M4D), under which EE is classified. Manyozo stresses that M4D’s functional objective is using media to promote and sell positive attitudes and behaviours. Studies have shown that the use of theories of individual behaviour change is widespread in EE scholarship, and is largely informing EE practice (Obregon & Tufte, 2014; Sood et al., 2004). According to Tufte (2005), experiences embedded in the early paradigm of behaviour change communication represents the first generation of EE communication. He distinguishes two other generations, which include participatory elements. In 2014, Obregon and Tufte noted the emergence in the EE field of new theoretical perspectives that are based on the concepts of participation, empowerment or culture. They associated these perspectives with the category of contextual theories used by Sood et al. (2004) in their work on EE.

Obregon and Tufte (2014) also noticed the prevalence of innovation and of the application of EE principles to new mediums like digital games. In 2009, Wang and Singhal analysed digital games as a vehicle for EE through the concept of serious games, that is, games with a utilitarian purpose, and on the basis of behaviour change models. They encouraged researchers to move beyond such models to reflect on sociocultural contexts in which individual decisions regarding play are grounded, and consider the way designers of serious games can pay attention to values and beliefs embedded in specific contexts. In this perspective, the present study proposes to reflect on the following questions: how innovative development projects involving digital games might enable the development of contextual theories in the field of EE through the notion of co-creation, and consequently challenge the way EE is conceptualised in the field of C4D? How innovative development projects involving digital games fit into the field of EE? What communication approach(es) is/are behind the concept of co-creation employed in relation to innovative development projects involving digital games?
These questions were investigated through exploratory and comparative case study. Two suitable projects were identified, and data were collected by means of interviews and documents. The analysis of the qualitative data brought to light emergent themes. Empirical data and theoretical concepts were considered together and a plurality of theories was used to study and compare the cases on the themes: EE features, co-creation aspects, development/humanitarian innovation processes, participation components and C4D approaches. The analysis is preceded by an explanation of the research methodology, and is presented in the last part of this paper, which starts with the literature review that introduces EE, games for change and the central role of the notion of participation, and continues with the theoretical framework that develops the different aspects of participation in serious gaming for change, development/humanitarian innovation, digital media and communications, and media design for social change.

2. Literature review and existing research

2.1 Communication for development: focus on entertainment-education

EE is defined as “the process of purposively designing and implementing mediated communication with the potential of both entertaining and educating people, in order to enhance and facilitate different stages of behavior change” (Bouman, 2002, note 1). Singhal and Rogers (2004) add that EE aims at increasing “audience members’ knowledge about an educational issue, create favorable attitudes, shift social norms, and change overt behavior” (p. 5). According to them, EE contributes to social change at the individual and the system levels. In 2009, Wang and Singhal reformulated EE definition to consider the recent developments in the field, especially the popularity of digital entertainment media and the emerging participatory culture:

Entertainment-education is a theory-based communication strategy for purposefully embedding educational and social issues in the creation, production, processing, and dissemination process of an entertainment program, in order to achieve desired individual, community, institutional, and societal changes among the intended media user populations (pp. 272-273).

Rather than a communication theory, EE is a communication strategy (Singhal & Rogers, 2004; Waisbord, 2001). This strategy operates within the framework of C4D, development
communication, communication for social change and communication for development and social change, which are different approaches to defining a field concerned with the role of communication and media in strategic interventions aimed at promoting change at individual, interpersonal and social levels, as well as actions to address societal issues (Enghel, 2013; Wilkins, 2008). Whereas it is generally agreed that those approaches are essentially about people rather than media technologies, the field is also about understanding the role played by information, communication and the media in directed and non-directed social change (Thomas, 2014). In his typology of three methodological and theoretical approaches within C4D, Manyozo (2012) distinguishes media for development (M4D), media development and participatory and community communication, and places EE under the M4D approach. Tufte (2017) stresses that “[m]edia for development is seen as the instrumental use of media as tools to pursue the dissemination of information and achieve individual behaviour change” (p. 55).

The concept of behaviour change communication (BCC) is commonly used to refer to strategic communication approaches aimed at enhancing individual behaviour change (Manyozo, 2012; Mefalopulos & Tufte, 2009; Morris, 2005; Tufte, 2017; Waisbord, 2014), and it has been closely associated to EE. Waisbord (2001) states that EE is a strategy that shares behaviour change premises, which are derived from socio-psychology and human communication theories, thus placing EE within the framework of the modernisation/diffusion paradigm. The diffusion model of communication focuses on linear communication, which involves information and knowledge transfer leading to behaviour change. It has been opposed to another communication model named participatory communication, which emphasises dialogical communication (Mefalopulos & Tufte, 2009; Morris, 2005; Servaes & Malikhao, 2005; Tufte, 2017; Waisbord, 2001). Waisbord (2001) stresses that participatory theories have criticised the modernisation/diffusion paradigm on the grounds that it promotes a top-down, ethnocentric and paternalistic view of development, and fails to implement social change because it solely focuses on improving messages in order to change people’s behaviour.

Rather than being about the transmission of messages, communication is now considered as being about meanings and processes, and providing opportunity for people to engage. In this view, the underlying theories related to communication, development and social change have changed over time, and modernisation theory and diffusion approaches are being replaced by other approaches, in particular participatory approaches (Lennie & Tacchi, 2011). Today, write
Mefalopulos and Tufte (2009), “participation, along with concerns for voice, empowerment, and poverty orientation, is at the core of much development work […]” (p. 3). This shift towards participatory communication is also reflected in the evolution of EE and BCC. Lennie and Tacchi (2011) describe BCC as “envisioning social and individual change, having evolved from information, education and communication […] programmes, to incorporate greater dialogue and ownership” (p. 17). Regarding EE, Tufte (2005) distinguishes three EE generations. The first generation is associated by Obregon and Tufte (2014) with the early paradigm of BCC. The second generation moves beyond BCC to include life skills development. The third generation reflects on issues of empowerment, participation and structural change, and is associated with communication for social change. Tufte (2005) states that the traditions of participatory communication are finding their way into “mass media borne EE strategies” (p. 167).

Sood et al. (2004) argue that EE programmes entail specific methodological features, including formative research on target audiences, investigation on audience exposure, and measurement of audience feedback and parasocial interaction with regard to the characters included in the programmes. EE programmes are informed by seven types of theories: 1) theories on the steps/stages that individuals pass through in a behaviour change process; 2) social psychological theories and 3) psychological models, both associated with behaviour change; 4) drama and role theories related to how people script or enact their own lives; 5) audience-centred effect studies; 6) hybrid models combining elements from various theories on individual behaviour change; and 7) contextual theories that move beyond individual behaviour change to include theories of power and social constructivism. Taking into consideration these categories, Obregon and Tufte (2014) analysed theoretical perspectives behind EE programmes as documented in published and unpublished work between 2002 and 2010. They found that EE practice remains rooted in theories of individual behaviour change, but they also note the emergence of new theoretical perspectives in EE scholarship, an increasing number of interdisciplinary perspectives on the use of EE and the application of EE to new mediums, including digital games.

2.2 Serious games: focus on games for change

In order to analyse digital games as a vehicle for EE, Wang and Singhal (2009) use the concept of serious games. The term serious games can be traced to the work of Abt (1970). Over time, various terminologies and definitions have emerged. Broadly speaking, serious games are defined
as “games with a utilitarian purpose” (Alvarez & Djaouti, 2012, p. 153). To reflect on serious games, two concepts have been coined: serious game, which refers to “games that have explicitly intended for purposes other than simple entertainment by their designer”, and serious gaming, which includes “any use of a game for purposes other than simple entertainment, whatever is the original intention of its designer” (p. 158). Serious gaming covers thus the use of serious games and the use or adaptation of commercial games originally designed for purely leisure time activities (Beavis, 2017). Today, serious gaming and games often imply a digital form, although serious games were originally not necessarily based on digital support (Beavis, 2017; Djaouti et al., 2011; Wilkinson, 2016). Wilkinson (2016) underlines that serious games adopted the games-as-motivation approach associated with edutainment, which is a type of computer-based instruction designed to motivate the gamer using game characteristics (Charsky, 2010).

However, Jarvin (2015) notices a shift from edutainment to serious games, which are seen as promoting deeper learning. While early versions of serious games were essentially designed for learning, contemporary serious games reflect other historical purposes of play, including play for therapy and play for social control (Wilkinson, 2016). Serious games have been classified according to their purposes, as well as their audiences and markets. Studies have shown that from 2002 to 2010 the proportion of educational games diminished as the result of an increased diversity of application domains in the emergent field of serious games (Djaouti et al., 2011; Wilkinson, 2016). While serious games were at first exploratory or marginal experiments, they are increasingly considered as a legitimised medium for education, healthcare and social change (Wilkinson, 2016). Terms such as games for peace, games for democracy, games for good, games for development, social impact games, transformational games, games for change or games for social change can be found to refer to games in the field of development and social change.

According to experts, gaming for development and social change can enhance learning and education of citizens; build capacity and develop expert competence; solve problems; promote social change, either by engaging dialogue or triggering behavioural change; help investigate decision-making; and evaluate people’s behaviours through the collection of information (Adil, 2015; Katsaliaki & Mustafee, 2014; McGonigal, 2010; Mykkänen & Vos, 2016; Raftree, 2015). Concerning humanitarian crises, serious gaming can enhance crisis preparedness and

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1 See: Serious Game Classification at http://serious.gameclassification.com/
communication in multi-actors networks, engage various stakeholders in raising awareness and collaboratively working to solve problems (Mochizuki, 2016; Mykkänen & Vos, 2016). It can also help raise funds2. In conflict settings, serious gaming has the potential to shift the way a player reacts to and behaves in the world, and can thus contribute to peace building (Caelin, 2016). Gaming for development and social change is discussed in a number of research studies, and specialised blog posts, articles, podcasts and reports on meetings (Adil, 2015, 2016 & 2017; Caelin, 2016; Fivenson, 2017; Goodwin, 2015; Hege, 2013; Katsaliaki & Mustafee, 2014; Lentfer, 2012; Menwyelet, 2016; Mochizuki, 2016; Mykkänen & Vos, 2016; Raftree, 2015; Schuller et al., 2013; The ATHA, 2017; The ICRC, 2015 & 2017; Wilkinson, 2013; Woodard & Katz, 2015).

The analysis of these texts reveals the prevalence of concepts such as information provision, knowledge gap/transfer, (participatory/social) learning, (social) behaviour change and social change/impact. Whereas the experiential aspect of games for development and social change is noted by some professionals, most of them emphasise that such games are tools or means to be used in relation to specific objectives, in particular behaviour change. According to Schuller et al. (2013), several models have been employed in serious games seeking to invoke a change in players’ behaviours. First, knowledge transfer, that is, conveying educational content to people to better inform their decision-making based on knowledge of the consequences of a certain behaviour. Second, gamification, which is defined as “using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning and solve problems” (Kapp, 2012, p. 59). Fuchs et al. (2014) note that gamification appears to be rooted in a specific understanding of the concept of behaviour, as something to be affected through the design of a game-like environment. Third, social learning, which is a theory part of the social psychological theories associated with behaviour change, and used in EE.

Wang and Singhal (2009) explored the contribution of serious games to the field of EE on the basis of behaviour change models, driven by psychosocial frameworks. They argue that serious games are not necessarily “EE digital games”, that is, based on EE principles. Yet, they claim that serious games can contribute to the field of EE, by opening up possibilities to strategically incorporate EE principles in the design, development and distribution of digital games. According to Singhal (2013), “serious (digital) games” are getting seriously considered by EE, to

2 In September 2017, a gaming marathon, called Z Event, was held to raise money for the French Red Cross to help the victims of Hurricane Irma.
the extent that Wang and Singhal (2009) definitional reformulation of EE, quoted in the first paragraph of the literature review, aims at taking into account the exponential growth in the development and the popularity of gaming applications and practices. While Wang and Singhal’s paper discusses the potential for social change of digital games from a behaviour change perspective, they note that research on EE digital games should move beyond the dominant models that focus on individuals as the locus of change to reflect on sociocultural contexts in which individual decisions regarding play are grounded, and consider the way designers of serious games can pay attention to values and beliefs embedded in specific contexts.

2.3 Contextual theories: focus on participation

According to Obregon and Tufte (2014), “contextual theories” is an emerging theoretical construct within the field of EE, which has expanded and diversified over time. In this regard, the scholars note the emergence of theoretical concepts that are organised into three areas: critical perspectives, empowering and participatory approaches, and greater attention to cultural dimensions that build on cultural studies. Research on contextual theories within the field of EE are scarce. The perspective that seems the most considered is participatory approaches. Henderson et al. (2017) stress that few attempts have been made to study the participatory component of EE. Focusing on best practice examples of EE where teams have worked alongside local audiences to plan, implement and evaluate EE programmes, the researchers found evidence of participatory methods used for EE in four categories: visual methods, oral methods, written methods and listening methods. Although games are mentioned among the range of communication platforms used by EE, this recent study found no evidence of participatory gaming for EE. While Henderson et al.’s work gives categories of participatory tools applicable to EE, it does not discuss participation within EE programmes.

In this perspective, it is useful to consider EE processes. Wang and Singhal (2009) define the EE process as “[…] all the steps that go into an effective EE intervention, including the development of creative ideas for programming, the actual production of media programs, as well as the dissemination, information processing, and dialogue that follows” (p. 273). Few scholars have investigated EE processes. In 1999, Bouman (2002) studied EE collaboration

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3 Piotrow and de Fossard define EE as encompassing nine P components: “EE is pervasive, popular, passionate, personal, participatory, persuasive, practical, profitable and proven effective” (Henderson et al., 2017, p. 63).
processes between television professionals and health professionals. As stated by Mefalopulos and Tufte (2009), collaboration can be considered as a form of participation. Collaboration processes involving actors other than professionals, in particular audiences, do not seem to have been investigated in the field of EE. Therefore, studies outside the EE field may be considered to reflect on processes of collaboration between various actors in EE programmes. Studying the way different actors are enable to participate in processes of innovation, Torfing (2016) conceptualised collaborative public innovation. His theory is based on several theories, including participatory theories of technological development, design thinking and innovation theory.

The concept of innovation seems relevant to approach participation within EE processes. Dutta (2011) critically notes the widespread inclusion of participation as a strategic tool in various phases of EE programmes “that are then rhetorically branded as innovative” (p. 261). Innovation can be regarded as a particular form of change and transformation involving an intentional and iterative process that identifies, adjusts and diffuses solutions and new ideas for adaptation and improvement (Betts & Bloom, 2014; Obrecht & Warner, 2016; Torfing, 2016). Obregon and Tufte (2014) noted the prevalence of innovation in the field of EE and observed “EE innovation in digital games” (p. 261). Studies on innovation within the field of EE, including regarding digital games, seem to lack. Yet, research papers can be found on innovation and digital games (Prax, 2016), innovation and information and communication technology for development (ICT4D) (Tacchi et al., 2014), and humanitarian innovation (Betts & Bloom, 2014; Obrecht & Warner, 2016). The notion of participation is at the core of these studies.

Several researchers have theorised the notion of participation. While Singhal (2001) explains that participation exists on a continuum from co-option at one end to collective action, Mefalopulos (2008) distinguishes between four perceptions of participation, and Arnstein (1969) conceptualises participation as an eight-level ladder ranging from non-participation to citizen power. Wishing to go beyond this ladder and address participation processes, Carpentier (2016) developed a four-level analytical model, designed to reflect on participatory media theory and guide participatory research applying a political approach rather than a sociological approach. The sociological approach defines participation as taking part in particular social processes, while the political approach produces a more restrictive definition of participation, which refers to the equalisation of power inequalities in particular decision-making processes. In turn, Lennie and Tacchi (2014) developed a Participatory Framework for Researching and Evaluating
Communication for Development and Social Change, which comprises seven components: participatory, holistic, complex, critical, emergent, realistic and learning-based.

In Lennie and Tacchi’s view (2013), this framework is a “push back” against results-based management. Armytage (2011) recalls that positivists have been widely influential in managing-for-development-results through the realignment of the development discourse towards results and improving effectiveness. Constructivists, in turn, are primarily concerned to hear the voice of stakeholders. They refute the scientific approach to evaluation and use participatory methods. Participatory evaluation recognises that implementing a people-centred development project is an iterative continuous process primarily concerned with learning. “This recognition conceives the change process as being flexible and needing to be adaptive, rather than linear and rigidly directed at targets” (p. 273). In this perspective, “[e]valuating communication for development and social change requires that we attend not only to the potential benefits and possibilities of communication, technologies, and media, but also to the particularities of the contexts through and in which they are shaped and experienced” (Lennie & Tacchi, 2014, p. 302).

3. Theoretical framework

3.1 Discussing participation in serious gaming for change

Wang and Singhal (2009) identify five properties that digital games need to have to be EE games: experiential gameplay; multimodality; interactivity; persuasive, interactive narrative; and social interaction. According to them, experiential gameplay may be the attribute that differentiates the most digital games from other entertainment vehicles. Digital gameplay allows gamers to actively “role-take” their own journeys of experimentation (Singhal, 2013). Several essays have stressed the link between role-playing and active participation in narratives (Torner & White, 2012). As Wang and Singhal (2009) note, a majority of the dramatic elements in game design have to do with narrative. Mykkänen and Vos (2016) argue that games can be seen as a form of narrative that can be to a greater or lesser extent a fiction or a simulation. Simulation, which is context-specific, is often the beating heart of serious games (Charsky, 2010; Michael & Chen, 2006). The recent rise of “simulation gaming” stems from purposeful construction of games as rule-based systems (Eichner, 2014; Wilkinson, 2016). Bogost (2007) argues that game rules are crucial, because the primary source of the persuasive power of computer games lies in the way video
games mount claims through procedural rhetorics, defined as the way games express meaning through rules and their execution, rather than in the games’ content, that is, narratives.

According to Wang and Singhal (2009), the coupling of narrative and interactivity embedded in games are interesting with regard to EE in the digital area. They write that “[i]nteractive narrative has many build-in psychological motivation mechanisms that help empower game players by allowing them to make choices that change the structure of the story and take actions that affect the eventual outcomes” (p. 278). Interactivity in digital games, argue the authors, enables an increased player engagement and participation. While interactivity supports a specific form of participation in the media text, different media provide different forms and degrees of an interactive textuality (Eichner, 2014). Wang and Singhal (2009) underline that interactivity in digital games can provide a different way of exposure, information processing and social interaction, by being real-time and multilateral. Besides, the enhanced multimodality capacity of digital games, in terms of content presentation and channels of communication, contributes to facilitate social interaction. The kind of social interaction enabled by the nature of game play, as well as multimodality and narratives, can increase the enjoyment of play experiences.

Dutta and Norskov (2017) emphasise that play in general, and game play in particular, should be an experience that allows players, who are defined as people with agency within the system, to feel more powerful. Reflecting on agency as a specific form of media experience, Eichner (2014) examines the sociological, psychological and techno-scientific approaches to this concept, which needs to be differentiated from the notion of interactivity. Her study focuses on agency in the process of media reception, and analyses the concept in relation to different media, including video games. Three categories of agency have been distinguished in game studies, principally on the basis of psychology theory, and in particular the work of Bandura who developed social learning theory: personal, proxy and collective agency. Eichner notes that collective agency emerges at the meta-game level, that is, beyond the actual game experience, and allows consideration of participation, which is defined as a mode of player involvement. When players are given the possibility to, individually or collectively, engage in specific ways with the text and beyond, for instance participate in the production of the video game, agency is defined as creative.

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4 “Personal agency […] refers to the interrelation between the player and the interactive environment. Proxy agency refers to mediated forms of agency, to the use of other (knowledge and practical) resources that help to cope with the game. Collective agency reflects on the artefacts and practices which require a socially interdependent effort […]” (Eichner, 2014, p. 116).
Wang and Singhal (2009) argue that EE-compatible games can be used to provide space for active participation in content generation, collaborative learning and collective action.

A way to approach participation of players in the production of digital games is through the notion of co-creation. According to Prax (2016), game design has developed a culture particularly open to co-creation. He proposes to consider co-creative game design not as including the creation of content through play but rather as focusing upon the impact of the creation on the overall game. He writes:

Only once the participants get an actual influence on the product is the production process [...] truly participatory. This does not mean that the participants have to achieve full control, but rather that there should be a participatory relation on the level of partnership if the process is to be understood as co-creation (p. 72).

Referring to Banks’ work, Prax stresses that the co-creation of a digital game can be understood as a type of open innovation process. Open innovation is considered a new form of cultural production in which users/players and corporations work together as partners for their mutual benefit. Regarding games for change, Dutta and Norskov (2017) aim to put the players at the centre of the game design process by developing a co-design methodology. Co-design/co-creation can also be understood as involving local people, in particular developers, in order to create serious games that resonate with local audiences and communities (Raftree, 2015).

3.2 Discussing participation in development/humanitarian innovation

Tacchi et al. (2014) studied the practice of co-creation within ICT4D. Analysing two different projects that use ICTs in innovative ways as a mechanism to achieve the particular type of development outcomes desired through the notion of co-creation, they found that underlying approaches of development can influence and constrain what co-creation, thought about in terms of participation, looks like in practice. They situated the two projects within the context of the Bottom of the Pyramid (BOP) and the Human Development and Capability (HDC) approaches. Their study shows that the project underpinned by a BOP approach was targeting the co-creation of a market around the consumption needs of the poor identified with local partners, whereas the project that followed a HDC approach was focusing on the co-creation of
content, thus promoting the agency and capabilities sets of local actors. They state that what is of particular significance is where the innovation is located. Innovation can be conceived as “the capacity of those in local communities to find meaningful, efficient and effective ways to respond to their very local and singular challenges and also, and equally, the challenges which they share with multiple similar communities globally” (Gurstein, 2013, para. 9).

Betts and Bloom (2014) emphasise that recognising and understanding innovation capacity within communities and putting these communities and local systems at the heart of the innovation process is characteristic of a bottom-up approach to humanitarian innovation. They add that this approach is familiar to humanitarian practitioners who regularly use participatory approaches to facilitate ideas and solutions within a community. However, participatory approaches to innovation have often failed because they take information but do not offer new solutions. In this view, Betts and Bloom claim that a practical model for engagement can be offered by the combination of participatory strategies with the innovation cycle. The process of innovation comprises several phases/stages, and can be applied to different types of innovation, the most widespread of which are product innovation and process innovation (Betts & Bloom, 2014; Obrecht & Warner, 2016; Torfing, 2016). Whereas literature on participatory methods informs the bottom-up approach to humanitarian innovation, this approach is also nourished by literature on indigenous innovation and user-centred design. The concept of user-centred design in humanitarian innovation refers to an innovation process that focuses on the end-user.

Obrecht and Warner (2016) define end-users as those who interface directly with the innovation, and who must use the innovation in order for it to work. Although there may be some overlap, end-users differ from gatekeepers and primary beneficiaries⁵. Thus, end-users are not necessarily the primary beneficiaries of an innovation, and primary beneficiaries are not the same as affected people. In many cases, humanitarian staff are the primary beneficiaries of an innovation. The experts note that the current innovation practices in humanitarian action take insufficient account of ways to engage affected people in innovation processes in a meaningful and responsible way, especially as primary end-users. While further exploration of user-centred design methods from the private and the IT sectors may be interesting to inform user-centred

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⁵ Obrecht and Warner (2016) distinguish three groupings of actors relevant to the adoption of an innovation: 1) primary beneficiaries: those who benefit directly from an innovation; 2) end-users: those who interface directly with the innovation, and who must use the innovation in order for it to work; 3) gatekeepers: those who can significantly influence uptake because of their control over the behaviours of primary beneficiaries and end-users.
design in humanitarian innovation, humanitarians already have community engagement and participatory tools at their disposal that can be employed in innovation processes with affected people. Whether end-users are affected people or humanitarian staff, a way to encourage a focus on the user in humanitarian innovation is through innovation spaces, which constitute a growing trend in the international humanitarian community. These spaces, also called innovation labs, operate within a specific context and are often conceived as spaces bringing various actors together to cooperatively innovate (Betts & Bloom, 2014; Bloom & Faulkner, 2015).

As Obrecht and Warner (2016) stress, multiple actors are involved in humanitarian innovation, including humanitarian and non-humanitarian actors across the private and the public sectors, and in some cases affected people. According to them, innovating teams benefit from taking a strategic approach to collaboration. Five collaboration strategies\(^6\) that can enhance public innovation have been distinguished by Eggers and Singh (2009). The cultivation and the replication strategies both aim at fostering collaboration within the public sector, while the partnership and the network strategies build on public-private collaboration. The crowdsourcing strategy is useful when an innovation solution requires input from a large number of unidentified specialists or lay actors. Torfing (2016) notes “[d]espite their different forms and labels, all of these collaborative strategies are based on some kind of networked interaction among different groups of actors” (p. 69). Betts and Bloom (2014) argue that the networks created within the framework of innovation spaces, even if virtual or online, can be considered as the greatest benefit of such spaces. According to Bloom and Faulkner (2015), innovation spaces are intended to be constantly evolving physical and/or virtual locations, and a number of them are conceived as both a physical and a virtual space, where actors meet both in person and online.

\(^6\) 1. The cultivation strategy aims to facilitate collaboration between different kinds of public employees by creating spaces for interaction outside but close to the daily operations […]; 2. The replication strategy strives to build collaborative relationships between public agencies within and across different levels and jurisdictions […]; 3. The partnership strategy tries to help public agencies develop innovative solutions by collaborating with private partners […]; 4. The network strategy endeavors to facilitate the exchange of ideas, mutual learning, and joint action through horizontal interaction between relevant and affected actors who have different kinds of resources and expertise; 5. The crowdsourcing strategy seeks to produce innovation by using the Internet to invite anonymous experts and lay actors from all over the world to share knowledge and co-create innovative solutions through online interactions based on free and open access to relevant information and resources (Torfing, 2016, pp. 68-69).
3.3 Discussing participation in digital media and communications

Hjarvard (2013) notes that the reality and forms of interaction that take place in virtual spaces have consequences for social praxis in the physical world. The virtualisation of social institutions derives from mediatisation, which is related to globalisation that presumes the existence of the technical means to extend communication and interaction over long distances. As the media expand possibilities to reach distant places, the distinction between global and local becomes more differentiated. In Fernández’s view (2014), the spaces of interaction on a local-national-global scale afforded by new technologies contribute to open new possibilities and opportunities for participation. A new form of society made up of specific configurations of global, national and local networks in a multidimensional space of social interaction has been conceptualised by Castells (2009): the network society, defined as a social structure constructed around digital networks of communication that can potentially be global. Castells argues that the rise of global digital networks of communication has led to a new organisational and technological context, and that a technological change has contributed to increase the ability of networks to introduce new actors and new contents in the process of social organisation. At the core of this change, states Castells, was the transformation of ICTs, which is nowadays characterised by the explosion of portable devices providing computing capacity and wireless communication.

As the International Telecommunication Union (2017) states, the spread of mobile-broadband services is driving today’s ICT development worldwide. This trend, causing the rapid proliferation of the Internet, is largely due to the expansion of mobile data coverage and inexpensive mobile phones. The mobile phone, notes Howard (2013), is the most globally pervasive, socially ubiquitous, digital networking device. According to Adil (2016) and Caelin (2016), the global penetration of mobile phones has helped expand the global audience of game players. Several experts emphasise that nowadays billions of men and women of most age groups spend billions of hours a week playing video games worldwide (Adil, 2016; Jarvin, 2015; McGonigal, 2010; The ICRC, 2017). The evolution of mobile phones, argues Castells (2009), led to the explosion of wireless communication, which has become a delivery platform of choice for many kinds of digitised products, including games. Games can be played on an increasing range of devices and platforms, in particular mobile devices such as phones and tablets, and online social networks such as Facebook (Leaver & Willson, 2015). Howard (2013) writes that
“[...] social networking software and mobile phones [...] are the final pieces of technology that allow even the most diffuse subnetworks to hook up to the network society” (p. 88).

In the network society, new technologies foster the media. Regarding games, Castells (2009) stresses that a new generation of social software programmes has made possible the explosion of interactive computer and video games that can be played online. New technologies have also promoted the development of social spaces of virtual reality which combine sociability and experimentation with role-playing games. The expert writes that “[t]he diffusion of Internet, wireless communication, digital media, and a variety of tools of social software has prompted the development of horizontal networks of interactive communication [...]” (p. 65). These horizontal networks make possible the rise of mass self-communication, which differs from mass communication that is predominantly one-directional. Mass communication is usually associated with mass media, often used in EE. While mass media is still present in the network society, it coexists with horizontal communication networks which are constituent elements of mass self-communication that can potentially reach a global audience but “[...] is also self-generated in content, self-directed in emission, and self-selected in reception by many who communicate with many” (p. 70).

Castells notes that the rise of mass self-communication has increased significantly the potential for audience to take charge of its communication practices and become an active audience. Yet, the very notion of audience is initially linked with mass communication, where it generally means passive audience. Tufte (2005) identifies the notion of audience as a core concept in the field of EE. While in the first generation the audience is considered as passive target groups, in the second and third generations, the audience is seen as active target groups. These last two generations embrace the principles of Freire’s liberating pedagogy, that is, “the empowering process of learning through ‘naming the world’ in a dialectic process of action-reflection-action” (p. 173). In the Freirean approach, argue Obregon and Tufte (2014), is embedded a social constructivist notion of subject, which is often a political subject. The construction of the subject can also occur in the discourses that emerge in the interplay between (media) texts, audience, and context. Whether reflected in this reception theory or the political theory mentioned before, the social constructivist notion of subject is emerging in EE. However, the field primarily understands the notion of subject as unitary, autonomous and rational; perception associated with effects studies, social learning theory and BCC. Obregon and Tufte claim that the notion of subject is a fundamental concept to analyse when reflecting on EE theoretical perspectives.
3.4 Discussing participation in media design for social change

Another key concept, emphasise Obregon and Tufte, is the notion of culture, which is also one of the core EE features identified by Tufte (2005). Whereas in the first generation culture is considered as a barrier, in the second generation culture is seen as an ally, and in the third generation culture is understood as a way of life. Obregon and Tufte (2014) stress that the dominant discourses in EE scholarship tend to focus on a pre-established goal to which culture-sensitive communication strategies are applied, while the emerging paradigm makes an in-depth analysis of everyday life, culture, and cultural practice as the starting point from which to develop the goals to pursue with the support of EE. This emerging reorientation of the notion of culture aims for a culture-centred approach as developed by Dutta (2011), who specially focuses on the culture-centred approach to social change. The notion of social change, argue Obregon and Tufte (2014), is the third key concept to consider. Notions of social change are reflected in different paradigms of development, including the modernisation/diffusion paradigm, dependency theories, the participatory and the post-development paradigms. Definitions of EE increasingly acknowledge the need to focus on social change in addition to individual change.

While Wang and Singhal (2009) analyse the potential for social change of digital games on the basis of psychosocial models, they note that understanding how individual decisions regarding play are grounded in sociocultural contexts is important, especially for designers of serious games. Experts involved in the design of serious games have mentioned the importance of being context-vigilant, taking into account local gaming cultures and focusing on game localisation, which involves not only language translation but also customisation of content and graphics (Adil, 2017; Chen, 2017; Lentfer, 2012; The ATHA, 2017; Woodard & Katz, 2015). Castells (2009) notes that, even if there is a layer of global culture in all media industries, most cultural products are rather local. As Dutta (2011) stresses, the local level is where the cultural members of the community co-construct meanings of their lives as a result of the interaction between culture, structure and agency. This interaction is central to the participatory process in the

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7 1. The linearity of the modernization paradigm, and its conceptualization of social change as a one-way development process primarily linked to economic development and a market-oriented economy; 2. The critiques of the modernization paradigm, which retain a linear conception of social change primarily as economic growth but emphasize the central role of the state – reflected in dependency theories; 3. The participatory paradigm (or multiplicity paradigm), which is open to a sense of agency and recognizes the role played by communities in development processes; 4) The post-development paradigm, with its emphasis on voice and representation of the marginalized in the mainstream discourse of development (Obregon & Tufte, 2014, p. 183).
culture-centred approach. Culture-centred participation is rooted in the acknowledgment that local communities have the agency to define local issues and find solutions to address them. The process of situating power in the local context, within the local community, in relationships, and in individuals, is defined as empowerment. Individuals and their relationships are connected to participatory spaces, which are created for listening to the voices of local communities.

According to Tacchi et al. (2014), the concept of voice in the areas of ICT4D concerns access, and the availability of skills to use media, technology and distribution platforms for the circulation of a range of alternative expressions. Dutta (2011) recalls that alternative narratives, ideologies, and voices have the opportunity to circulate in spaces created by new media forms, which can be employed as alternative media, that is, sites of media production that exist outside the realms of traditional controlled mainstream media. Prax (2016) argues that mainstream digital games can be turned into alternative media through co-creative game design. Co-creation of digital games is defined as the change of the design of existing games through participation in the production of the game by players. The actual impact of participation on the outcome of the production process is central to co-creation of alternative media. Co-creation is understood as both a process of influencing the outcome of the production and a means for co-opting existing media to present alternative content. While collaborating on existing games can be interesting for development organisations that want to invest in games for change, with regard to costs and audiences, these organisations may prefer to create new games in order to oversee the game’s content (Hege, 2013). Democratizing the access to the creation of media content in local communities at the margins is one way of creating alternatives spaces (Dutta, 2011).

Dutta (2011) writes that “[w]hen individuals and their communities become the producers of media content that is then globally distributed through new media platforms, they create opportunities for social change” (p. 285). According to Tacchi et al. (2014), creative engagement with media and technology might provide an interesting mechanism for participatory development. They argue that different forms of participation in development through the notion of co-creation might be enabled by ICTs. As Tufte (2017) reports, technologies can be conceived as social vectors articulating processes of empowerment. Nevertheless, Read and her colleagues (2016) underline that “[i]f the power of initiative, design, funding and analysis still resides with the tech-savvy individuals and organisations based in the global North, then it is difficult to concur with the view that technology is empowering or liberating” (p. 12). As Pieterse
(2005 & 2010) stresses, issues related to social capabilities, rather than technology, should be first considered to address the digital divide, defined by Rouse (2014) as the gap between demographics and regions that have access to modern ICTs and those who don’t. Access to technology and platforms on which digital games for development and social change are played is an important aspect to consider (Raftree, 2015). Some experts believe that moving games to mobile may help reduce technology barriers (Adil, 2016 & 2017; Fivenson, 2017; Raftree, 2015).

4. Methodological framework

4.1 Research approach

This research aims at investigating the contribution that innovative development projects involving digital games can make to the field of EE, which is part of the broader field of C4D. In this perspective, the study was conducted within the framework of the interpretive paradigm. Contrary to the positivist view, interpretivism is based on the assumption that social reality is not singular or objective but rather shaped by social contexts and human experiences, and thus needs to be considered from subjective interpretations of individuals evolving in specific contexts. These ontological and epistemological aspects\(^8\) constitute the research philosophy. As underlined by Bhattacherjee (2012), interpretive research is appropriate for exploring hidden reasons behind complex, interrelated, or multifaceted social processes; for building theory in areas with no or insufficient a priori theory; for studying context-specific, unique, or distinctive events or processes; and for uncovering interesting and relevant research questions and issues for follow-up research. For these reasons, this type of research was well-suited to the present work, which studies complex and distinctive social processes in an area with little a priori theory and room for uncovering relevant research issues to investigate.

Interpretive research is generally associated with inductive reasoning. Induction begins with specific observations to form broader generalisations and theories. Similarly, abduction starts from a set of observations, but rather it seeks to find the likeliest possible explanation for the group of observations. Typically, abduction is used when observations appear surprising or

\(^8\) Ontology and epistemology are two ways of viewing a research philosophy. Ontology is concerned with the nature of reality, whereas epistemology is concerned with the nature of knowledge.
anomalous with regard to the current understanding and knowledge (van de Ven, 2007). In this respect, abductive reasoning was well-suited for studying innovative development projects involving digital games that seemed not to fit the classic understanding of EE within the field of C4D. According to Spens and Kovacs (2006), the pathway of abductive research, like the one of the other research approaches, starts from prior theoretical knowledge. In this case, such knowledge was acquired in previous courses. Like induction, the abductive research process continues with real-life observation. What is characteristic of abduction, and was implemented in this work, is the constant interplay between observation and theoretical framework before the formulation of the research question. Then, abduction follows the same pathway as deduction, which is concerned with applying or testing existing theory before generating new knowledge. At this stage, theories were considered rather than tested.

4.2 Research strategy

As stated by Reiter (2017), research that does not aim at testing hypotheses, like confirmatory research, but rather at asking how much a theory and a hypothesis can explain, how well it can explain it, or how meaningful and fruitful an explanation is, is exploratory. He adds that “[…] exploration seeks to refine, adapt, or change the initial explanation in an itinerary process of applying other explanations to the observation in forth-and-back between theory and reality” (p. 144). Exploratory research is primarily associated with qualitative research, which is used to seek an in-depth understanding of social phenomena based on the direct experiences of human beings as meaning-making agents. In this perspective, qualitative research is interconnected with interpretivism. According to Bakker (2010), the assumptions regarding human meaning characteristic of the interpretive paradigm in social science are central to case study research. Case study can be exploratory. In this form, case study is often applied to investigate distinct phenomena characterised by a lack of detailed preliminary research (Streb, 2010). Therefore, exploratory case study appeared to be well-suited to this study. In case study as a methodological approach, one or few instances of a phenomenon are studied in depth (Blatter, 2012). Yet, a limited-depth study was conducted for this research due to its exploratory nature (Elger, 2010).

Regarding case study, Blatter (2012) states that, in the constructivist view deriving from interpretivism, empirical reality and theoretical concepts are mutually constitutive, and a plurality of theories are used to understand and analyse cases; theoretical generalisation, operating
through interpretive inferences from a variety of observable objects to meaningful abstract concepts, is made possible by the selection of crucial cases; and cases are cases when they fully fit the internal logic of the theory constituted by a plurality of diverse indicators. For this study, preliminary Internet research had revealed the various applications of digital games for tackling social issues\(^9\), as well as the multiplicity of actors involved in the development and/or diffusion of those games\(^10\). The selection of the case(s) was made in accordance with four main criteria: (a) the project involves digital games as the main component, (b) the project is innovative, (c) the project is ongoing and leaded by development organisations, and (d) the project is on development/humanitarian issues. Two projects meeting those criteria were identified: *Gamoteca*\(^11\) and *Arabia Felix*\(^12\). A comparative case approach was thus taken. Such approach aims at discovering contrasts, similarities or patterns across the cases (Campbell, 2010).

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\(^9\) Digital serious games can be found on climate change, natural resources, food security and natural disasters (e.g. *Climate Challenge*, *World without Oil*, *Week without Oil*, *Get water!*), *3rd World Farmer*, *African Farmer*, *Food Force*, *Stop Disasters*\(^1\)); disease epidemics and hygiene (e.g. *Nightmare: Malaria*, *MoHiM*); women’s rights, human rights, governance and civic uprising (e.g. *Half the Sky: The Game*, *ICED – I can End Deportation*, *Cyber Nations, 1979 Revolution: Black Friday*); conflicts and peace (e.g. *Project Syria*, *1000 Days of Syria*, *This War of Mine*, *Arma 3*, *PeaceMaker*, *Peace Park*, *Peace Superheroes*, *Endgame: Syria*, *Cedaria: Blackout*, *Battle for Humanity*); refugee crises and migration (e.g. *Refugees – Report from the ground*, *Darfur is Dying*, *Syrian Journey: Choose your own escape route*, *Finding Home*, *The Migrant Trail*, *Forced From Home*); child protection (e.g. *Child Protection Simulations*) or education (e.g. *Ayiti: the Cost of Life*).

\(^10\) Digital serious games are developed and/or diffused by public service broadcasters (e.g. BBC, ARTE); new media studios (e.g. *iNK Stories*) and game development companies; serious game development agencies and for-profit social enterprises (e.g. *Danish Digital Learning Game Agency*, *GRID*); non-profit organisations specialised in social innovation or digital games for social change (e.g. *Butterfly Works*, *Games for Change*, *Games for Peace*); development and humanitarian NGOs or charities (e.g. the ICRC, Doctors without Borders, Save the Children, the *Humanitarian Leadership Academy*, the *National Democratic Institute*); government and international development agencies (e.g. USAID, GIZ, Danida, UNDP, UNESCO, UNHCR, UNICEF, the United Nations Environment Programme, the United Nations International Strategy for Disaster Reduction, the World Food Programme, the World Bank), foundations or universities.

\(^11\) Website at http://www.gamoteca.com/

\(^12\) Website at https://www.butterflyworks.org/storage/app/media/One%20pagers/BW_ArabiaFelix.pdf
## OVERVIEW OF THE PROJECTS

<table>
<thead>
<tr>
<th></th>
<th>Project 1: Gamoteca</th>
<th>Project 2: Arabia Felix</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organisations</strong></td>
<td>Two non-profit organisations: a charity and an UN agency</td>
<td>Two non-profit organisations: a social innovation studio and a government agency</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Office in Europe</td>
<td>Office in Europe</td>
</tr>
<tr>
<td><strong>Main partners and networks</strong></td>
<td>Africa, Middle East, Asia</td>
<td>Africa, Middle East, Asia</td>
</tr>
<tr>
<td><strong>General objective</strong></td>
<td>Support professionals in the humanitarian sector to better prepare for and respond to crises and disasters in their own countries</td>
<td>Promote peace and democracy in a conflict-affected country</td>
</tr>
<tr>
<td><strong>Specific objective</strong></td>
<td>Build local capacity to design games as innovative solutions for humanitarian training</td>
<td>Develop engaging games to raise public awareness on peace and democracy</td>
</tr>
<tr>
<td><strong>Types of innovations</strong></td>
<td>Product and technology-focused: digital games</td>
<td>Product and technology-focused: digital games</td>
</tr>
<tr>
<td></td>
<td>Process and non-technology-focused: co-creation</td>
<td>Process and non-technology-focused: co-creation</td>
</tr>
<tr>
<td><strong>Types of games</strong></td>
<td>Simulation, role-playing</td>
<td>Adventure, puzzle, platform, online multiplayer</td>
</tr>
<tr>
<td></td>
<td>Mobile</td>
<td>Mobile</td>
</tr>
<tr>
<td><strong>Target audiences</strong></td>
<td>Local professionals in the humanitarian sector</td>
<td>Local populations</td>
</tr>
<tr>
<td><strong>Types of stakeholders involved in the co-creation process</strong></td>
<td>Local professionals in the humanitarian sector: NGOs, charities, government agencies, social enterprises, media companies, universities</td>
<td>International and local designers and creators, gamers, community members</td>
</tr>
<tr>
<td><strong>Main activity</strong></td>
<td>In situ workshops</td>
<td>Remote workshops</td>
</tr>
<tr>
<td><strong>Results at the time of the research</strong></td>
<td>5 workshops conducted between 2017-2018 and about 25 game prototypes produced</td>
<td>3 phases conducted since 2016 and 4 games developed</td>
</tr>
</tbody>
</table>
4.3 Research methods

Aaltio and Heilmann (2010) mention that the most common data gathering method for case study is interviews. In qualitative research, stresses Brinkmann (2008), most interviews are semi-structured. As stated by Barlow (2010), this type of interviews seeks to address a number of predetermined questions or topic areas. They are typically used when the researcher seeks both comparing the participants’ responses and fully understand their unique experiences. Thus, semi-structured interviews were well-suited to this work. For each project, interviews were prepared by formulating similar questions that were shared with requesting participants by e-mails (Annex 1). Video calls, which lasted between 40 and 60 minutes each, were then organised to conduct audio-recorded interviews with the coordinator of each project and the social technologist of one project. The three informants were selected internally by their organisation, which had been contacted via e-mails. As noted by Elger (2010), placing particular reliance on a few key informant interviews is typical of limited-depth case study, which is characterised by a limited number of points and periods of access to the research setting and sources of data. For this study, primary data collected through interviews were crucial due to the lack of existing data. Secondary data sources, like presentations and reports on the projects, were also gathered.

As stated by Evers and van Staa (2010), using more than one method to gather data is defined as methodological triangulation, which leads to data type triangulation. For this work, transcripts of recorded interviews and documents were used to understand the cases. In one case, data were gathered by interviewing two persons, which is data source triangulation. Theory triangulation was also used to interpret the data by means of several theoretical schemes. Evers and van Staa note that multiple triangulation is a way to confirm the breadth and accuracy of the data set and its interpretation, and enhance the completeness of the findings. Triangulation is seen as a useful concept not only for data collection but also for data analysis, which consists of reducing, rearranging and interpreting the data. In interpretative qualitative analysis, stress Evers and van Staa, an essential element is the coding of the data. For this work, the content of each interview was analysed through open coding, which is identifying and organising raw data into meaningful categories (Price, 2010). Those categories were then reduced through thematic coding. Thematic analysis aims at identifying themes or patterns of cultural meaning (Lapadat, 2010). Such analysis was also used to examine the documents related to each case. Finally, the two cases were
compared on the themes: EE features, co-creation aspects, development/humanitarian innovation processes, participation components and C4D approaches.

4.4 Research evaluation

The preceding sections develop the different aspects of a methodology that aims to be coherent. Interpretivism is particularly appropriate to study a social phenomenon from subjective experiences of individuals. Such phenomenon can be studied in depth through case study, which is commonly used in interpretative research and qualitative research, closely linked together. Qualitative methods are often included in case study and can serve as a basis for abductive theorising. Abduction can be applied, in interpretivist research, as a logic of inquiry. With its aim of investigating viable paths for further inquiry, abduction fits well with exploratory research. Such research can be conducted through case study. The methodology used for this work allows to study in depth a complex phenomenon that can possibly inform other research settings, to produce valid data, to generate new ways of seeing the data, to provide an understanding of the phenomenon and insights to define a problem or hypotheses. Limitations however exist. Issues have been raised regarding the subjective nature of interpretivism, the lack of scientifically rigorous methods in qualitative research and the possible bias introduced by the researcher, the uncertain validity of abductive inferences, the intuitive and non-conclusive aspect of exploratory research, and the problem with generalising the findings from interpretive qualitative case studies.

Limited-depth case study also has weaknesses. While conducting such study can be justified by the exploratory nature of the research, as well as the resource constraints surrounding this research, in time, money and access to the projects, limited-depth case study narrows the scope of research methods like interviews, and precludes the use of methods like participant observation. This method of observation is appropriate for studying social phenomena about which little is known and where the behaviour of interest is not readily available to public view, but it entails prolonged engagement in the field (McKechnie, 2012). A longer period of time could also be used to collect data at several time points, following a longitudinal rather than a cross-sectional design, which refers to collecting data at one time period only (Shanahan, 2010). Diversifying methods to gather and analyse different types of data from various sources may help to further understand the studied phenomenon, and to potentially generate through open, axial and selective coding a theory from data, like in grounded theory (Glaser & Strauss, 1967).
5. Analysis

Project 1 (P1) and project 2 (P2) propose to use digital games, in particular mobile games, to promote change. In P1, games are used to build capacity of humanitarians and collaboratively work on problem solving and learning in the areas of disaster preparedness and response. In P2, games are used to enhance learning and education of citizens, raise awareness on issues relating to human rights and promote peace and democracy in a conflict-affected country. As Alvarez and Djaouti (2012) stress, combining video games and utility functions, and targeting a market other than the only entertainment are the features of serious games.

<table>
<thead>
<tr>
<th>SERIOUS GAME CLASSIFICATION</th>
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</thead>
<tbody>
<tr>
<td>Purpose</td>
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<tr>
<td>Audience</td>
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<tr>
<td>Market</td>
</tr>
</tbody>
</table>

P1 and P2 primarily consider serious games for change in relation to gamification. P1’s reports note that “gamification techniques can offer non-profit professionals a unique and engaging way to interact with their community to promote change that benefits the individual and society”. According to Schuller et al. (2013), gamification is one of the three models employed in serious games for behaviour change, along with knowledge transfer and social learning. These two concepts are however also incorporated into P1’s approach to gamification. The social technologist states that “for [them], it is taking some [elements of gamification] concepts but making […] social learning much more real and practice-based”. Having previously investigated gamification from a pedagogical perspective, he adds that his team “started to look at how [to] combine knowledge transfer with skills applications, with deep coordination, with feedback, all at the same time”.

5.1 Considering entertainment-education

The coordinator of P1 stresses that “there is a lot of behaviour studies that show that gamification is very […] useful for […] certain learning objectives”. P1, as well as P2, comprise references to theories focusing on individual behaviour change and used in EE (Sood et al., 2004).
### INDIVIDUAL BEHAVIOUR CHANGE MODELS

<table>
<thead>
<tr>
<th>Steps/stages models</th>
<th>Project 1</th>
<th>Project 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diffusion of innovations theory</td>
<td>The creation of digital games as innovative solutions for humanitarian training is communicated through several workshops and online platforms among the members of the humanitarian sector</td>
<td>With the use of digital games, gamers pass through stages in order to assimilate a desired behaviour change</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social psychological theories</th>
<th>Social learning theory</th>
<th>Social learning theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital games are designed to train humanitarian professionals on certain behaviours leading to certain behavioural changes</td>
<td>Digital games are designed to promote peace and democracy, and inspire people to contribute to peace</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Psychological models</th>
<th>Serious digital games contain motivating game elements that help to foster engagement, which is also encouraged by the establishment of creative spaces</th>
<th>Serious digital games are designed to engaging people the most</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Theory of the collective unconscious’</td>
<td>Theory of the collective unconscious</td>
<td>Drama theory</td>
</tr>
<tr>
<td>User persona are archetypes of persons who would use the games</td>
<td>Gamers go through levels from conflict to peace</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Audience-centred theories</th>
<th>Consideration to users’ needs, audience involvement, parasocial interaction and interpersonal communication in social networks</th>
<th>Consideration to users’ needs, audience involvement, parasocial interaction and interpersonal communication in social networks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideation theory</td>
<td>Spread new ways of training humanitarians through digital games</td>
<td>Spread new ways of designing serious digital games for change</td>
</tr>
</tbody>
</table>

Sood et al. (2004) distinguish three EE methodological characteristics. First, formative research, which is analysing target audiences to determine their needs, desires, behaviours, and media usages. In this regard, the coordinator of P2 mentions that “[they] do user research before [they] start anything, to just see what kind of technology people are using and also how often they use them”. In addition to formative research, EE projects benefit from process evaluation activities,
in particular feedback (Singhal & Rogers, 2004). While P1’s coordinator highlights that the workshop activities and content are adjusted based on the feedback received in the previous one, P2’s coordinator talks about a “trial-and-error” process fuelled by the feedback received from communities and users. EE projects also benefit from summative research, which is measuring audience effects. Before this, *audience exposure* needs to be investigated, which is the second EE methodological characteristic identified by Sood *et al.* (2004). Referring to the project’s market place, P1’s coordinator states that “[they] want to have the possibility of rating the games and commenting on the games, and also, counting how many people have copied the games in their own environment, [and] how many people have actually played with those games”. Feedback mechanisms are thus also employed to evaluate the games. These games may include *characters*, which is in line with the third EE methodological characteristic identified by Sood *et al.* (2004).

### EE METHODOLOGICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th></th>
<th>Project 1</th>
<th>Project 2</th>
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</thead>
<tbody>
<tr>
<td><strong>Formative research</strong></td>
<td>Driven by local demand, Respond to training needs faced by local communities, Consider the kind of technology people use and the most suitable types of games, Explore the gamification context through a “knowledge expedition”</td>
<td>Focus on people’s needs and end-users’ preferences regarding games, Consider the kind of technology people use, the frequency of this use, and the most suitable types of games, Evaluate risk through a “do no harm assessment”</td>
</tr>
<tr>
<td><strong>Process evaluation</strong></td>
<td>Done during and after each workshop through real-time feedback on the prototypes, feedback surveys and reports</td>
<td>Evaluated orally to prepare new workshops</td>
</tr>
<tr>
<td><strong>Summative research</strong></td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Audience exposure</strong></td>
<td>Collect indicators (numbers of views, downloads, players, ratings and comments) for each game, and the content of the comments through online distribution platforms</td>
<td>Collect indicators (numbers of views, downloads, players, ratings and comments) for each game, and the content of the comments through online distribution platforms,</td>
</tr>
</tbody>
</table>
Comments on the games are also gathered through a Facebook page, which has thousands of followers.

<table>
<thead>
<tr>
<th>Characters</th>
<th>No available evaluation on the appropriateness, similarity and likability of games’ characters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No available evaluation on the appropriateness, similarity and likability of games’ characters</td>
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</table>

P1’s games are presented as “real-life scenario-based games”. As noted by the project coordinator, “these are games but, in a sense, they are also simulations”. In particular, they are “mobile simulations”. Reports state that mobile devices are well-suited to orchestrate a flow of events through a ‘mixed-reality’ environment, and can play an important role in crisis situations involving role-playing. In the project coordinator’s view, “gamification fits into more of a role-play scenario”. In turn, P2’s games involve stories, and are “more about strategy and making decisions” (Project coordinator). According to Wang and Singhal (2009), digital games can be considered as EE games if they encompass five specific properties. This the case of P1 and P2:

<table>
<thead>
<tr>
<th>PROPERTIES OF EE DIGITAL GAMES</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>Project 1</td>
</tr>
<tr>
<td></td>
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<tr>
<td>Persuasive, interactive narrative</td>
</tr>
<tr>
<td>Interactivity</td>
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<tr>
<td>Multimodality</td>
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<tr>
<td>Social interaction</td>
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<tr>
<td>Experiential gameplay</td>
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<tr>
<td>Project 2</td>
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<td></td>
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<tr>
<td>Stories and characters</td>
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Wang and Singhal’s argument is made from a behaviour change perspective. As stated by Obregon and Tufte (2014), behaviour change communication relates to the first EE generation. Two other generations have been distinguished by Tufte (2005). Each generation represents a different understanding of a series of core concepts in EE. Regarding P1 and P2:

<table>
<thead>
<tr>
<th>Core concepts</th>
<th>Project 1</th>
<th>Project 2</th>
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<tbody>
<tr>
<td>Catalyst</td>
<td>Partnerships between external agents and communities</td>
<td>Partnerships between external agents and communities</td>
</tr>
<tr>
<td></td>
<td>Second generation</td>
<td>Second generation</td>
</tr>
<tr>
<td>Problem</td>
<td>Lack of information and skills and inappropriate learning contexts</td>
<td>Structural inequalities and social conflict</td>
</tr>
<tr>
<td>Entertainment</td>
<td>Tool for change</td>
<td>Part of a popular culture</td>
</tr>
<tr>
<td>Change</td>
<td>Individual behaviour, social norms, and structural conditions</td>
<td>Individual behaviour, social norms, structural conditions, power relations</td>
</tr>
<tr>
<td></td>
<td>Second generation</td>
<td>Third generation</td>
</tr>
<tr>
<td>Audiences</td>
<td>Active target groups and/or participants, as well as citizens</td>
<td>Active target groups and/or participants, as well as citizens</td>
</tr>
<tr>
<td>Expected outcomes</td>
<td>Change in individual behaviour, and articulation of social and political processes and collective action</td>
<td>Change in individual behaviour, and articulation of social and political processes and collective action</td>
</tr>
<tr>
<td>Duration</td>
<td>Short/long term</td>
<td>Short/long term</td>
</tr>
<tr>
<td></td>
<td>Second and third generations</td>
<td>Second and third generations</td>
</tr>
<tr>
<td>Communication</td>
<td>Problems and social issues</td>
<td>Problems and social issues</td>
</tr>
<tr>
<td>Education</td>
<td>Liberating pedagogy</td>
<td>Liberating pedagogy</td>
</tr>
<tr>
<td>Culture</td>
<td>Way of life</td>
<td>Way of life</td>
</tr>
<tr>
<td></td>
<td>Third generation</td>
<td>Third generation</td>
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</table>

Three notions that echo the concepts of audience, culture and change are, according to Obregon and Tufte (2014), fundamental to reflect on EE theoretical perspectives: subject, culture and social change. Regarding the notion of subject, P1 and P2 seem to take a social constructivist approach to a political subject, by considering that the social construction of the subject is rooted in the practices of everyday life. While both projects include an in-depth analysis of everyday life cultural practices, they also have a predetermined development goal to pursue with the help of
Due to the active participation of local populations in the projects, the type of help is however more than a culture-sensitive application of a basic EE model, associated by Obregon and Tufte with dominant discourses in the field of EE. The analysis of the notion of culture in relation to P1 and P2 leads to a blurred categorisation. Concerning the notion of social change, both projects fit into a participatory approach to social change, which is open to a sense of agency and recognises the role played by communities in development process. Therefore, both projects refer to concepts associated with contextual theories, especially participatory approaches, as categorised by Sood et al. (2004) and developed by Obregon and Tufte (2014).

5.2 Considering co-creation

Tacchi et al. (2014) underline that participation in development is hard to achieve. In this context, they demonstrate that the notion and examples of co-creation emerging from innovative ICT4D projects can provide interesting mechanisms for participation across a range of development projects. P1 and P2 use digital games in innovative ways as a mechanism to achieve development and social change. Both projects can thus be understood as ICT4D projects. These projects are built on the concept of co-creation, which is associated with design thinking. While a presentation on P1 indicates that the co-creation methodology refers to the use of design thinking, a fact sheet on P2 mentions that design thinking and co-creation are at the heart of the work approach. Torfing (2016) states that “design can be seen as a deliberate attempt to create innovative solutions in response to particular needs and specific problems and challenges” (p. 93). He mentions that design involves various processes, including framing, researching, forming ideas, prototyping, selecting, implementing, and learning.

P1 developed a model for designing games, which is based on the following steps: “empathising, defining, ideating, prototyping and testing” (Presentation). The first step is supported by tools such as “user personas” and “empathy maps”, prepared by the development organisations. The second and third steps entail the determination, by participants in workshops, of the goal of the game, the “user journey”, the storyboard, and the “roles”, “actions”, “interactions” and “feedbacks”. These activities are supported by “wireframes” mimicking the functionalities of the “authoring tool”, which is then used by the participants to create the screens and the media assets, and to launch the “rapid prototypes” that are finally tested through play by other participants. In turn, P2 organises “workshops with experts and end-users to pressure cook ideas,
concepts and early prototypes” (Fact sheet). The design process entails the determination, by all participants, of the formats, themes, stories and characters of the games, and the creation of the narratives, procedural rhetorics and audio-visual components. In both cases, the process continues after the workshops to consolidate the prototypes. Prototyping is seen as an emergent and participatory form of experimentation (Lezaun et al., 2017). Once the prototypes are consolidated, games become the products of the design process.

In P1 and P2, the design process is collaborative. P1’s main strategy is to invite a mix of actors from diverse sectors to participate in workshops during which multisectoral teams are created. The project coordinator emphasised that “[they don’t] only target […] humanitarian NGOs or charities, it is also academia, […] social enterprises, governmental organisations, […] some private sector representatives, media companies…” In this perspective, P1 uses the network strategy (Eggers & Singh, 2009). This strategy is also employed in P2, which brings together developers, graphic and game designers, sound engineers, artists, context experts, community members and gamers. In this case, the project coordinator mentioned that “[the selection of the participants] is just a lot of different connections and networks”. Similarly, P1’s coordinator stressed that the organisation relies heavily on the networks in the field, including for selecting the workshop participants. In order to consolidate and, eventually, finalise game prototypes, P1 also considers to invite people worldwide to participate in an online hackathon. This refers to the crowdsourcing strategy (Eggers & Singh, 2009).

<table>
<thead>
<tr>
<th>COLLABORATION STRATEGIES</th>
<th>Project 1</th>
<th>Project 2</th>
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<tr>
<td>Network strategy:</td>
<td>Invite a mix of actors from diverse sectors, including NGOs or charities, UN agencies, governmental organisations, social enterprises, innovation labs, private firms, media companies and universities, to participate in workshops</td>
<td>Bring together developers, graphic and game designers, sound engineers, artists, context experts, community members and gamers</td>
</tr>
<tr>
<td>“endeavors to facilitate the exchange of ideas, mutual learning, and joint action through horizontal interaction between relevant and affected actors who have different kinds of resources and expertise” (Torfing, 2016, p. 69)</td>
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</table>
Crowdsourcing strategy: “seeks to produce innovation by using the Internet to invite anonymous experts and lay actors from all over the world to share knowledge and co-create innovative solutions through online interactions based on free and open access to relevant information and resources” (Torfing, 2016, p. 69)

Consider inviting people worldwide to participate in an online hackathon

Torfing mentions that the participation of concerned stakeholders in the design process in order to meet users’ demands refer to theories of participatory design. A fact sheet on P2 stresses that “[t]ogether with [its] game designers and development partner [, the organisation is] able to do various types of games based on the preference of the end-user”. In P2, the primary end-users of the games are players in a specific conflict-affected country. Affected populations are particularly asked to help develop appropriate products with regard to gamers’ preferences and local contexts. The coordinator of the project emphasised that its specific objective is to “learn about exactly what the people on the ground, and the people playing and designing the games want out of them”, through the co-creation process. In this perspective, the organisation has co-created the games with end-users, context experts and local creatives (Fact sheet). Local professionals are significantly involved in the game design process. This is also the case for P1, in which local humanitarians are the primary end-users/players of the games, and some are involved in the co-creative game design. In such a case, the players’ participation has an impact on the outcome of the production process. In P1 and P2, the outcome of the production process is impacted by the participation of local populations, who also co-create the games’ content. P1’s coordinator highlighted that participants are free to create their own content.

As Dutta (2011) notes, opening the access to the creation of media content in specific local populations is a way of creating spaces for the articulation of alternative voices. In P1 and P2, the voices of local populations are listened to through the establishment of participatory spaces, called “workshops” or “labs”, to which individuals and their relationships are connected. While P1’s coordinator mentioned that workshops are very participatory, the social technologist noted that what are called labs are very much co-creation events. As emphasised by Dutta (2011), the
impetus to create such participatory spaces is at the core of the culture-centred approach to social change, which understands participation as the capacity of those in local communities to define issues locally and develop corresponding solutions to address them. According to Gurstein (2013), such capacity also relates to innovation at the local level. Tacchi et al. (2014) stress that the location of the innovation is particularly significant when considering co-creation. They note that what co-creation looks like in practice may be influenced and constrained by underlying development approaches. In this respect, P1 and P2 seem to focus on the co-creation of game content by promoting the agency and capabilities sets of local actors. According to Betts and Bloom (2014), building on the capacities of local populations is characteristic of a bottom-up approach to humanitarian innovation. In this approach, participatory strategies need to be combined with the innovation cycle to facilitate ideas and new solutions within a community.

5.3 Considering development/humanitarian innovation

With regard to humanitarian innovation, Betts and Bloom (2014) and Obrecht and Warner (2016) write that the recognition and definition of a specific problem or challenge is the first step of the process. The definition of the problem is also a key EE concept (Obregon & Tufte, 2014). As noted previously, this concept seems to be understood differently in the two projects. P1 is concerned with improving humanitarian training. The project coordinator and the social technologist both highlighted that traditional ways of training humanitarians through simulation entail important financial, material and human resources, as well as a lot of preparation, and are complicated to coordinate and not very scalable. In turn, P2 wants to further support a running project that aims to strengthen a peace process. A question arose: how can people be inspired to contribute to peace? (Fact sheet). In the context of humanitarian innovation, “problem-driven innovation processes tend to operate from the perspective of demand, identifying recognisable needs and responding to them by innovating new solutions” (Obrecht & Warner, 2016, p. 16). P1 aims “to respond to training needs faced by local communities” (Presentation), and is driven by local demand (Project coordinator & Social technologist). P2 is based on what has been seen by the donor organisation as a need for peacebuilding in the target country (Project coordinator). In both cases, recognition emerged primarily from experience, including using simulations for humanitarian training (P1) or managing a peacebuilding programme in the target country (P2), as well research and evaluation on pedagogy, engagement, game design and gamification (P1) or
game users (P2), rather than from affected people’s feedback. Feedback mechanisms involving all parties concerned, in particular affected populations, are part of humanitarian action (Bonino et al., 2014; OECD, 2010). As stated previously, such mechanisms are also part of the EE process.

The second step of humanitarian innovation processes is *ideation* or finding creative potential solutions (Betts & Bloom, 2014; Obrecht & Warner, 2016). P1 and P2 both focus on product innovation, that is, digital games, and process innovation, that is, co-creation. Regarding P1, innovation is both ICT and non ICT-focused. On the one hand, the project coordinator underlined that “using technology for the simulation [is] innovative because typically the humanitarian sector is quite a low tech sector”. Technology is seen as a possible means to augment or substitute traditional ways of running simulations, and to reduce the costs of preparation and foster scalability. On the other hand, the coordinator stressed that “the pedagogy [is] quite innovative” and that workshops are conducted with “innovative participatory methodologies”. Similarly, P2’s coordinator stated that the innovation lied in the “co-creation process” and the “human-centred design” approach. It was emphasised that “what comes out of that is something that people need; it’s not just something that companies or organisations think they need”. Obrecht and Warner (2016) state that ideation is followed by development, which entails the creation of practical, actionable plans and guidelines. While P1 is based on a “train-the-trainer methodology” that is materialised by toolkits for game design and participatory training, P2 is based on a general framework, including goal, process, deliverables and schedule. Developing ideas for programming is also part of the EE process (Wang & Singhal, 2009).

The following step of humanitarian innovation processes is *implementation* and testing and adapting a solution (Betts & Bloom, 2014; Obrecht & Warner, 2016). This can partly correspond to the actual production of media programmes in the EE process (Wang & Singhal, 2009). At this stage, P1 and P2 have similar practices. First, both projects conducted some research on target audiences. As noted previously, such ‘formative research’ is also an EE methodological characteristic. In addition, P1 studied “local gamification scenarios” through a “knowledge expedition” (Project coordinator), and P2 examined the technology landscape to evaluate the levels of smartphone, network and wireless coverage (Project coordinator). Similarly, P1’s coordinator indicated that “everybody has a smartphone, and almost every smartphone was working with the mobile app”, and P2’s coordinator noted that “a lot of people in general have
phones, android phones particularly”. P2 also conducted a “do no harm assessment” for the games to “make sure there is nothing that is […] very wrong [or unsafe]” (Project coordinator).

Second, both projects organised workshops, also called labs. Regarding P1, the idea was “to create […] space for [participants] to actually engage” (Project coordinator), and “[to create] spaces for capturing local knowledge and innovation in learning” (Presentation). In both cases, workshops are organised to create space for co-creation. P2’s coordinator stressed that the organisation’s role is “to conduct the co-creation workshops which are the core of what [they] do”. P2 organises “remote workshops” involving a constant connection between two locations, while seeking to “bring as many people as [they] can in Europe, physically, so that the connection stays strong”. Typically, P1 organises in situ workshops, including face to face sessions supported by an online environment. Occasionally, online events that bring together participants located in various geographical places can be organised. Based on Bloom and Faulkner’s paper (2015), P1 and P2’s workshops can be seen as innovation spaces conceived as both physical and virtual spaces. As noted previously, such spaces are established to foster the creation of game prototypes. Prototypes are an integral part of the innovation process (Betts & Bloom, 2014).

The last step of humanitarian innovation processes is diffusion or appropriately scaling the solution (Betts & Bloom, 2014; Obrecht & Warner, 2016). Likewise, dissemination, information processing and dialogue are part of the EE process (Wang & Singhal, 2009). First, P1 seeks to replicate the innovation. While the project coordinator stressed that “[they] think that it is important to have [a] sort of local replication in place”, the social technologist added that one of the objectives of the project is to enhance the ability of partners “to learn something and be able to replicate that with other partners, their partners”. In this perspective, similar workshops have been organised in several countries13. For people who have not actually being to the training, they can still access to a toolkit, a sort of online version freely available (Project coordinator). Additionally, participants in one workshop were encouraged to “continue expanding the knowledge gained through further rolling-out in the community through social media in order to involve youth in the game co-creation” (Report). In P2, Facebook is employed to foster social interaction around the games. The project coordinator emphasises that “[their] Facebook community is […] quite vibrant and active; they are thousands of people in it”.

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13 See: https://www.humanitarianleadershipacademy.org/topics/gamification/
Second, P1 and P2 use online platforms, including google play and apple stores, to distribute the games produced. P1’s coordinator mentioned that there is a market place in which people can see which games are published. Similarly, P2’s games can be seen and downloaded when they are in the play store (Project coordinator). P1 also wants to launch a hackathon to spread the news about the fact that games are available and can be used by organisations (Project coordinator). Jenkins et al. (2013) argue that the circulation of independent games demands participatory mechanisms to compensate for the lack of promotional budget. According to them, the circulation of all forms of media by the audience contributes heavily to their spread, and ‘spreadability’ is determined by processes of social appraisal and on the active participation of engaged audience members. As Castells (2009) stresses, the potential for audience to become active and subject has increased with the rise of mass self-communication that appeared with the network society. A networked culture, state Jenkins et al. (2013), is easily accessible to those who want to spread content. Spreadable media expands the power of people to help shape their everyday media environment. This hold the potential for social change.

5.4 Considering participatory evaluation

One way to research and evaluate communication for development and social change in P1 and P2 is by analysing the components developed by Lennie and Tacchi (2014) in their participatory framework. The first component is participatory approach, including trust, partnership, dialogue and inclusion. P1 and P2 both emerged from a collaboration between two development organisations in the North. In P1, partnership is also considered at the local level. The project coordinator mentioned that local partners were trusted to tailor the content of the workshops and select the participants, in addition to the logistics management. These workshops aim at “bringing together different partners who are working in the humanitarian sector” (Social technologist). The project coordinator stated that “the main objective was to engage a quite diverse audience to, first of all, collaborate, and come up all together with some rapid prototypes or possible games to be used by local communities”. In this perspective, workshop participants are working in “teams”. The social technologist emphasised the importance of diversity, that is, getting “a good mix of organisations, gender, seniority, [and levels of comfort with technology]”.

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14 See: http://app.gamoteca.com/marketplace
Participants are asked to bring their own computer and mobile devices to the co-creation session, in which they are provided with the opportunities to exchange with professionals and peers. Co-creation can also be taken to another level with the intended organisation of a hackathon. In P2, the process of co-creation is coordinated by one of the development organisations. The project coordinator stressed that it is collective: “they do everything all together in order to make sure that every person in the process has a say and is really creating physically and also conceptually the product”. In this regard, the “right people” are brought together. This can include male and female end-users, context experts and local creatives, as well as gamers and community members.

A second component is holistic approach, including interconnections, interrelationships, systems and context. On the one hand, P1 draws on existing interconnections between the main office of the leading organisation, its regional centres, and local stakeholders and networks. The project coordinator indicated relying heavily on the organisation’s centres and networks in the field, considering that the local partners “have more channels of communication”. On the other hand, the project aims at reinforcing interconnections, in particular by means of workshops in specific countries. People located in various geographical places can also be brought together through the organisation of online events. Online spaces were developed to share follow up actions through the Social Learning forum, as well as workshop materials and games. As mentioned previously, games have been published on a shared market place “where they can be accessed by other trainers” and “shared across organisations” (Presentation). Workshop materials, including toolkits, are also free and available for participants on an online shared space. As stressed by the project coordinator, workshop tools and activities are tailored to the local context in accordance with the knowledge expedition and feedbacks from the local partners, and the materials can be translated into the local language. Workshop participants design the games locally. In P2, games are designed by an international team, which consists of international and local professionals, who are part of networks. Their interconnections are reinforced through the organisation of workshops involving both physical and virtual interactions. The project coordinator emphasised that the “inputs” from the local partners are very important because games are “completely tailored and customised” to the local context. The types of games are also based on target groups, such as young players or female gamers. P2 has had three phases and now comprises four games. Feedback on the publicly available games are received from users and community members. The project coordinator emphasised that the Facebook community of the project is “quite vibrant and active; there are thousands of people in it”.
A third component is complex approach, including multiple perspectives, contradictions, unpredictability and uncertainty. In P1, complexity is theorised at two levels. First, disaster situations are complex. Second, training people to prepare for and respond to such situations is challenging. P1’s coordinator stated that serious games can be understood as effective learning designed to learn how to respond to complex situations and challenges. A report mentions that the organisation and its partner “have worked together to investigate the potential of using game elements for increased engagement and effective training of humanitarian staff”. In this perspective, they have organised workshops and a massive open online course. While rapid prototypes are produced during workshops, there is no guarantee that these prototypes will be finalised afterwards, and that games will be diffused and used to train otherhumanitarians and affected people. Regarding the project, the coordinator and the social technologist stated that they were interested to see how the games can be used, how different organisations asking for the same content can collaborate, how the workshops can be conducted in a train-the-trainer methodology, and how technology can augment or substitute more traditional ways of running simulations. However, the project coordinator noted that “the technology was just a tool for [participants] to put their own ideas and [pass that] content into the platform”. She added that “[they] felt that [they] were not prescribing predefined content for games”. Similarly, P2’s coordinator stressed that “the outcomes are very much determined by the process itself”. The target groups, game formats and contents are defined in brainstorming and co-creation sessions.

A fourth component is emergent approach, including dynamic, flexibility, adaptability and self-organisation. P1’s dynamic primarily comes from the co-creation methodology, which is designed to allow a lot of “flexibility”. The project coordinator stated that participants can change user personas and “are 100% free to create a game on whatever they like”. As mentioned previously, the workshop materials and activities can be adapted to the local context and translated into the local language. Besides, the project is constantly evolving. While the project coordinator indicated that they were redesigning the platform to make it a bit more informative and developing a market place, the social technologist mentioned that, in the future, they may explore other simple tools to design the games. Regarding the current one, the workshop participants have access to the platform and they can improve and test the games after the event. The social technologist stressed that from the workshop, participants can play the games within their organisations, “deploy them to their learners”, and replicate what they have learnt with their partners. Self-organisation is considered from the selection at organisational level to the
replication at local level. As noted previously, particular emphasis is given to feedback. Participants give comments on the workshop and real-time feedback on game prototypes. Online feedback is also taken into consideration. Similarly, P2’s dynamic is sustained by feedback mechanisms involving community members and end-users. Focusing on the preference of the end-user, P2 has developed various types of games. Each co-creation phase is adapted on the basis of the lessons learnt from the previous one. While the same stakeholders are involved in all the phases of the project, groups are “quite open and flexible” (Project coordinator).

A fifth component is realistic approach, including pragmatism, mixed methods, grounded perspective and engagement. P1’s coordinator and the social technologist remain realistic with regard to the games developed within the framework of the project. They stressed that the budget does not allow the conception of games comparable to those produced by the game industry, and that the duration of the workshops only allows the creation of “rapid prototypes”. Regarding the “game authoring tool”, the social technologist indicated that the platform was chosen mainly because of its simplicity, free access and availability online. This tool can be used through the computers and mobile devices, generally smartphones, brought by the workshop participants, and employed to design the games and play them once created. The game authoring tool allows to create real-life scenario-based games. Such games are associated with simulations, which are context-specific, and “very typical in the humanitarian sector” (Project coordinator).

Mobile simulations approach is combined with other approaches. As mentioned previously, mixed methods, including face to face sessions and online environments, as well as multiple feedback mechanisms, are used to implement and evaluate the co-creation methodology. As stressed by the project coordinator the idea behind this methodology was to create space for participants to engage. In P2, the question was also how to engage people the most? (Project coordinator). In this regard, various kinds of games have been developed based on the preferences of different end-users and the local context. The method is mainly the organisation of co-creation sessions, and whatever means available are used to connect partners worldwide. The project coordinator stated that involving everyone in the process allows to have “a product that is made by the people who would use it”. Games are developed for mobile phone, because a lot of people in general, and particularly young people, have phones, specifically android phones (Project coordinator). Facebook is used to get feedback from community members.
A sixth component is learning-based approach, including action learning, responsiveness, creativity, and capacity development. Reflection on learning and “how technology can be included to design better learning” is at the core of P1. As the social technologist stated, workshops are organised “to bring people together to learn about innovation and gamification”. He understands gamification as “blended learning”. A report notes that a blend of learning methods combines different approaches, including: “participatory activity-oriented learning, game-based learning, design thinking techniques and mobile simulations”. In the social technologist’s view, all learning should be practice-based, feedback-based and team-based. In this perspective, the approach fits in action learning. P1’s learning approach aims at “supporting the needs of individuals, organisations and communities by facilitating access to innovative learning resources, platforms and tools that can enable locally relevant capacity-sharing and mutual learning” (Presentation). Emphasis is thus put on local and social learning. At the centre of the learning approach are co-creation workshops, which are organised to create the space for hands-on creative activities where participants are provided with opportunities to enhance their design skills and exchange with professionals and peers. Beyond the workshops, participants can receive support through webinars and one-to-one coaching for further development of their games. “Building local capacity” is essential in P1. On the contrary, P2’s project coordinator highlighted that the organisation did not feel necessary to train young people on the games, and did not necessarily create games that are clearly about learning. Games are more about strategy and making decision within games, so through that process the people learn. As for P1, this is in line with action learning. Players are besides contributing to the learning process through co-creation.

A seventh component is critical approach, including rigor, critical reflection, difference and power. P1’s coordinator mentioned that the workshop materials are based on engagement and educational theories. A “game design toolkit” and a list of methodologies for participatory training have been developed and published. As noted previously, feedback mechanisms have been implemented. According to the organisation’s website, its mission is “to enable people around the world to prepare for and respond to crises in their own countries”. In this context, the social technologist stated that the organisation’s role is to provide the tools rather than creating learning. While the project coordinator noted that the platform used to rapidly create real-life scenario-based games has strengths and weaknesses, the social technologist mentioned that the organisation wants to try using some other platforms. As noted previously, one of the project’s objectives is to enhance the learning ability and ability to replicate workshops of the
participants, who are selected on the basis of diversity. Gender is seen as important and generally the “gender ratio” has been good, except in one country (Project coordinator). Gender has also been considered in P2, when it was discussed to include more “female-focused games”, and thus bring female community members as well as gamers or designers in the co-creation process. So far, the games have targeted young people, who generally “like to download games”.

5.5 Considering communication for development

In their paper on participatory communication, Mefalopulos and Tufte (2009) refer to four perceptions of participation: passive participation, participation by consultation, participation by collaboration and empowerment participation. P1 and P2 seem to relate to the two latest forms.

<table>
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<tr>
<th>PERCEPTIONS OF PARTICIPATION</th>
<th>Project 1</th>
<th>Project 2</th>
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<tbody>
<tr>
<td>Participation by collaboration</td>
<td>Primary stakeholders are invited to participate in projects that already have determined objectives, and are facilitated by external actors and experts</td>
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<tr>
<td>Empowerment participation</td>
<td>Primary stakeholders are nevertheless actively involved, by means of horizontal communication and joint collaborative efforts, in the decision-making process about how to achieve the goals</td>
<td>Primary stakeholders and outsiders are equal partners in the co-creation process and make joint decisions about what should be achieved within this process and how</td>
</tr>
<tr>
<td>Primary stakeholders initiate, own and control the co-creation process</td>
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</table>

P1 and P2’s primary stakeholders have therefore a certain degree of decision-making for determining the process and end product. This indicates some degree of citizen power (Arnstein, 1969). According to Manyozo (2012), citizen and delegated power is a feature of participatory and community communication. The functional objective related to this approach is fostering engagement among development stakeholders with decentralised decision-making processes. While P1 and P2 have this objective, they also aim at developing or strengthening media capacity, literacy and environment. This is characteristic of the media development approach. The features of this approach are detailed by Scott (2014), and several elements can be connected to the projects: strengthening capacities for the production and the dissemination of games through training and
provision of digital media technology (P1); representing media diversity with the development of games, reflecting various perspectives through media contents, and enabling citizens to create, access and use media contents (P1; P2). In both cases, media ownership is neither in governments nor in private companies’ hands. Scott notes that this factor generally designates alternative media. Such media are partly defined by their capacity to generate non-standard methods of creation, production and distribution (Atton, 2002). P1 and P2, which develop co-creative game design processes, can be seen as fitting into this definition of alternative media. The other definitional element is the content (Atton, 2002).

Due to the fact that P1 and P2 use games to promote positive attitudes and behaviours, the projects can also be associated with M4D. Scott (2014) describes the features of the M4D approach as follows: problems are understood as lack of information; solutions are delivering appropriate information and develop suitable individual attitudes; groups of reference are relatively passive targeted audiences; communication is linear and persuasive; participation is instrumental; change is planned and driven by external agents; culture is considered a barrier to development; and media has the function of challenging traditional norms and values. These features are similar to the features of the diffusion model of development communication presented by Mefalopulos and Tufte (2009, p. 8), and the features of the first generation of EE communication distinguished by Tufte (2005, p. 173). As analysed previously, the projects are rather aligned with the second and the third generations. The features of these two generations are similar to the features of the life skills and the participatory models of development communication presented by Mefalopulos and Tufte (2009, p. 8). This suggests that, while they are EE projects, P1 and P2 may fit more into the participatory and community communication approach rather than the M4D approach, under which Manyozo categorises EE.

According to Manyozo (2012), the emergence of the Internet and social and new media has blurred the boundaries between M4D, media development and participatory and community communication. Within each approach, ICT4D has specific features. These features can be analysed in relation to P1 and P2, which can be considered as ICT4D projects.
<table>
<thead>
<tr>
<th>C4D APPROACH</th>
<th>Project 1</th>
<th>Project 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participatory and community</td>
<td>Fostering engagement among development stakeholders with decentralised</td>
<td>Participatory methodologies employed in bringing communities of practice</td>
</tr>
<tr>
<td>communication</td>
<td>decision-making processes</td>
<td>together in solving development challenges</td>
</tr>
<tr>
<td>ICT4D characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media development</td>
<td>Developing/strengthening media capacity, literacy and environment</td>
<td></td>
</tr>
<tr>
<td>Functional objective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Features</td>
<td>Representing media diversity with the development of games,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reflecting various perspectives through media contents,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enabling citizens to create, access and use media contents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strengthening capacities for the production and the dissemination of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>games through training and provision of digital media technology</td>
<td></td>
</tr>
<tr>
<td>ICT4D characteristics</td>
<td>Providing the technological infrastructure, affordable access and literacy</td>
<td>Provide a free game development tool that is accessible online, and</td>
</tr>
<tr>
<td></td>
<td>to enable the use of technology within development contexts or for</td>
<td>pedagogical supports, tools and spaces for its use</td>
</tr>
<tr>
<td>Media for development</td>
<td>development objectives</td>
<td>Professionals and citizens living in a conflict-affected country are</td>
</tr>
<tr>
<td>Functional objective</td>
<td></td>
<td>given spaces to create, access and use games</td>
</tr>
<tr>
<td>ICT4D characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Promoting positive attitudes and behaviours</td>
<td></td>
</tr>
</tbody>
</table>

The table suggests that both projects combine features of the three main approaches in C4D identified by Manyozo. The scholar argues that these approaches are held together by the concepts of participation, power and policy.
6. Conclusion

The analysis of the selected innovative development projects involving digital games through multiple theories and conceptual frameworks on EE has given more insight on how those projects fit in the field of EE. The projects seem to encompass elements of the theoretical and methodological characteristics of EE projects identified by Sood et al. (2004), as well as elements of the properties of EE digital games identified by Wang and Singhal (2009). This suggests that the projects can be considered as EE projects. Considering that the mentioned research papers principally focus on individual behaviour change theories, this could also suggest that the selected projects may be informed by such theories. However, the analysis of the projects through the concepts identified by Tufte (2005) to understand different generations of EE communication, and the fundamental notions identified by Obregon and Tufte (2014) to reflect on EE theoretical perspectives, suggest that the projects are moving beyond behaviour change communication towards participatory communication, and are thus part of EE contextual theories. Consequently, this also suggests that the projects do not align with the media for development approach as conceptualised by Manyozo (2012) in association with behaviour change communication, and under which EE has been classified. Rather, the selected projects seem to comprise elements of the three approaches in C4D identified by Manyozo: media for development, media development, and participatory and community communication. As stressed by the researcher, ICTs have blurred the boundaries between these three approaches, which are held together by the concepts of participation, power and policy.

As determined during the research, the selected innovative development projects involving digital games can be considered as ICT4D projects. Both use gamification, employ design thinking and emphasise the co-creation process. The analysis of these projects through the notion of co-creation on the basis of Tacchi et al.’s (2014) work on ICT4D, and Prax’s (2016) work on digital games, has given more insights on the communication approach(es) behind the notion of co-creation employed in relation those projects. This notion of co-creation is closely linked to the notions of innovation and participation. In addition to the mentioned research papers on co-creation, literature on humanitarian innovation has confirmed the participatory aspect of the selected projects. Research on humanitarian innovation and co-creative game design can both be reflected on through the concept of user-centred design. However, in co-creative game design, participation concerns the player, while in humanitarian innovation,
participation concerns mostly humanitarian staff and affected populations. The different papers suggest that the selected projects fit in innovation at the local level or a bottom-up approach to humanitarian innovation, which both focus on the capacity of those in local communities to define issues locally and develop corresponding solutions to address those issues. This feature corresponds to the definition of participation in the culture-centred approach to social change (Dutta, 2011). While this suggests a cultural dimension associated with the selected projects, the analysis of the concept of culture with regard to EE has led to a more mitigated conclusion.

The analysis of the selected projects through the different steps of the innovation process suggests that participation is mainly integrated in the implementation and the diffusion of the innovation. The analysis of the projects through the perceptions of participation (Mefalopulos & Tufte, 2009) confirms the idea that the projects may be between participation by consultation and empowerment participation. Finally, the analysis of the projects through the components of the participatory framework (Lennie & Tacchi, 2014) indicates that the selected innovative development projects involving digital games include all the elements of the framework, although there may be some variations between the projects. This framework comprises aspects of critical perspective, participation and empowerment, and cultural dimension, that is, the three areas distinguished by Obregon and Tufte (2014) in relation to EE contextual theories. The analysis of the projects suggest that the participatory and empowering approaches are the most developed, followed by cultural aspects. This opens prospects for future research on contextual theories in the field of EE and how to develop them. Further research on how the notion of participation might contribute to challenge the way EE is conceptualised within the field of C4D and how EE projects using ICTs might enable integrated approaches to C4D through the notion of co-creation can be interesting. From a practical perspective, case studies show that serious digital games, especially mobile games, can be used as a participatory method for EE.
Annex 1

Project: Gamoteca

1) What were the origins of the gamification labs conducted so far? Are there other gamification labs planned?
2) What was/were the objective(s) of these gamification labs? How long did they last? What were the expected outcomes?
3) Why focusing on gamification? Why developing digital games?
4) How did the organisation get involved in these gamification labs? What was its role in each of them?
5) What other partners were involved in these gamification labs? What was their role in each of them?
6) How many people participated in the gamification labs conducted so far? Why and how were they selected?
7) How were the workshops organised and facilitated? How many have been held so far?
8) How was the process of creation? How many people were involved in the development of each game prototype?
9) How were the game prototypes designed? In what language(s) were they developed?
10) How many game prototypes were developed in each gamification lab? What were their topics?
11) What types of game prototypes were developed?
12) For what platform(s) were the game prototypes developed?
13) Who are the intended users of these game prototypes and why?
14) How many of the game prototypes are available? Where can they be played or downloaded?
15) How has the use of the available games been evaluated? What are the main results?
16) What differences and similarities have been observed regarding the different gamification labs?
17) How were those gamification labs innovative?
18) How have local contexts and local competences been taken into consideration within each gamification lab?
19) How has accessibility to technology been taken into consideration within each gamification lab?
20) To what extent has the educational aspect of the games been considered?
21) What material is available to document the gamification labs conducted so far?
22) Are there any significant aspects that I did not consider in my questions?
Project: Arabia Felix

1) What is the origin of the project?
2) What is/are the objective(s) of the project? What is its duration? What are the expected outcomes?
3) Why develop digital games?
4) How did the organisation get involved in the project? What is its role?
5) What other partners are involved in the project? What is their role?
6) How many people are involved in the development of each game? Why and how were they selected?
7) How is the process of co-creation working? Who participates in this process?
8) How are the workshops organised and facilitated? How many have been held and who participated?
9) How were the games designed?
10) Why develop 4 games?
11) Why develop different types of games?
12) Why develop mobile games? What about other platforms?
13) Where can the games be played or downloaded? In what language(s) are the games available?
14) Who are the intended users of these games and why?
15) How has the use of the available games been evaluated? What are the main results?
16) How is the project innovative?
17) How have local contexts and local competences been taken into consideration within the project?
18) How has accessibility to technology been taken into consideration within the project?
19) To what extent has the educational aspect of the games been considered?
20) What material is available to document the project?
21) Are there any significant aspects that I did not consider in my questions?
Sources


