ETHICS, PRIVACY AND TRUST IN SERIOUS GAMES

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Abstract
This chapter presents a set of ethical concepts and related guidelines starting from a historical review perspective leading through to present day work on computer ethics, privacy and trust. The review forms a basis for a discussion on ethics within serious games including related types such as persuasive games, gamification and pervasive games. The objective being to identify common issues and areas of interest where the boundaries between these types of game blur. The result is a set of concepts which specifically explores the gaps which have arisen for example in areas such competing values between stakeholders, the effect of serious pervasive games on non-participants, rules of play, transparency, consent and autonomy. The guidelines contain sets of issues, questions and examples that aim to alert researchers and practitioners to key concerns.

Keywords
Ethics, privacy, trust, concepts, guidelines

Introduction

Serious games are ones which have a purpose beyond simply entertainment and they are used across a variety of contexts ranging from traffic management (McCall & Koenig 2012), location-based historical games (Blum et al. 2012), cultural heritage (Chochliouros et al. 2013) and health (Uzor & Baillie 2013a). Quite often these games either seek to change behaviour or teach people about a specific domain. However, serious games raise a set of unique challenges as they are no-longer simply about entertaining users within a predefined gaming context but rather are focused on how they can effect the everyday life of their users, for example influencing health, transportation or educational choices. In turn such possible effects are directly impacted by the ethical, privacy and trust aspects which are either explicitly identified by the developers or which may arise indirectly while the playing the game. This in turn gives rise to professional, legal, moral, social and other concerns (Floridi & Sanders 2002). They are also impacted upon by the nature of the game for example whether it is within a constrained classroom type environment or whether it takes place in a more pervasive environment where limits and boundaries are less clear e.g. on the road. However, regardless of the particular type of game there is a need to consider the impact on the users and wider society as they increase in popularity and availability.

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The chapter takes a predominantly practical position in that it seeks to provide researchers, practitioners and developers with an overview of ethics, privacy and trust issues and how these impact upon the area of serious games, it does not seek to debate the relative merits of different models of ethics (Floridi & Sanders 2002; Versteeg 2013) or to assess the precise moral problems posed from any philosophical view point. Instead it seeks to inform and highlight issues that are relevant to the field. The chapter expands on discussions relating to data privacy and trustworthiness as these are of increasing importance and have an impact on ethics. As a result it recognises that while the field of computer ethics has been emerging for some decades there are some unique problems with serious games and that while this chapter will alert the reader to potential issues the list is (1) by no means exhaustive (2) that there are many other authors who have contributed concepts and guidelines and that it is (3) open to debate. However, in all cases these issues should be considered during the design, deployment and testing of any serious game. The chapter begins by discussing the generic challenges proposed by serious games, it then explores the background to ethics and generally accepted practice drawn from a range of backgrounds including medical and computer ethics. This is followed by a review of different game types and how ethical issues impact upon each one. The paper closes with a set of ethical concepts and guidelines and a conclusion.

Background

The Ethics of Serious Games

Serious games are a growing area of work and for many they represent a good way to improve the lives of people either by educating them, encouraging them to change their health and fitness patterns or through improving their workplace performance (and hence job prospects). They use fun elements to influence either knowledge or behaviour outside of the game itself. For example, a school child learning about simple arithmetic through a game should be able to benefit from the knowledge and skills learned in the game so that when they sit their end of year exam their score improves. Likewise the person who is not exercising enough may use a persuasive game to encourage them to start jogging. While teams of employees in a call centre may use gamification approaches to improve call handling efficiency. There would for example be little point in a serious game that resulted in the child only being able to answer mathematical problems in a game-like environment or a gamified application that sowed workplace discord even if corporate productivity improved as employees cheated or perceived it as a monitoring service. These are perhaps overly simplified examples yet it is precisely these kind of problems which ultimately must force us to consider a number of key issues. Prior work by (Koenig et al. 2012; McCall et al. 2012) succinctly summarised the core challenges with respect to pervasive traffic games and helped to start a discussion on three key concerns:

- **Ethics:** including aspects such as consent, risk, etc.
- **Privacy:** including aspects such as what data is collected, how it is stored and how it is shared
- **Trust:** the end users perception of whether they trust the system

While on the face of it ethics may seem different from privacy, the two are linked. For example as noted later a lack of transparency can lead to users being unable to see what data is being collected on them or how it is being used. Likewise users may not trust a system if they are unsure what they are consenting to, either in terms of direct use, what it may lead to later or how their data may be shared.

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A strict definition of serious games would probably mean that emerging areas such as gamification, persuasive or pervasive games should be ignored, however many of the challenges that exist within serious games are equally relevant to gamified applications. Furthermore, serious games are increasingly incorporating elements drawn from pervasive and persuasive games. As a result this chapter will explore a plethora of serious games and related game "types" such as gamification, pervasive and persuasive gaming. The basic premise is that serious games should be viewed as an umbrella term that can include pervasive and persuasive games as well as gamified applications. Indeed the view here is that any game or game-like environment that results in a serious external benefit (to e.g. health, education or workplace behaviour) should be considered within the category of serious games. There are however some limitations and caveats to this position, for example not all pervasive games are serious games. Also while it is debatable whether gamified applications are serious games, their end objectives are often quite similar i.e. to influence behaviour in an environment external to the game itself. The chapters draws on work mainly from psychology and related areas, primarily because these appear to be well developed and also in many cases it is the duplicitous nature of serious games which leaves them open to debate in terms of ethics, privacy and trust. A serious game may have the desired effect of improving a particular skill or physical problem. For example, in the case of exergaming this may be hidden from the end-user and the effect of using the game may not be clear until much later either in terms of both learning that skill or the impact on their future lives.

Background

Ethics

This section will use as its starting point the ethical codes drawn from the APA (American Psychological Association), the quotation later perhaps best illustrates the diverse areas which although drawn from psychology are often inextricably linked to serious games. The primary reason for starting from this angle is that such an approach initially focuses on the effect on humans, rather than the underlying technology. However, as Brey (Brey 2000) points out this approach is not without its limitations, as in effect we are forcing moral and ethical codes from non-computer science areas onto computer science when in reality wider society may have no clear understanding about the morality issues that relating to a particular technology. In essence the ethical and moral approach in this sense relies on prior experience of non-computer science areas simply because we have experience of them and as a result we may end up being unable to see potential ethical issues in future. A good example would be the use of data collected by Google, Yahoo and Microsoft by State Security Agencies such as the NSA (USA), GCHQ (UK) and the German Federal Security Ministry; many end-users of these services would probably never have knowingly or explicitly agreed to such use. As a result Brey argues the technology is not a neutral part of the equation, and indeed may be core to the effect such systems have on users. None the less and despite these limitations it is important at least at this stage to take a step back from the technology and focus on basic ethical issues.

"Areas covered include but are not limited to the clinical, counselling and school practice of psychology; research; teaching; supervision of trainees; public service; policy development; social intervention; development of assessment instruments; conducting assessments; educational counselling; organizational consulting; forensic activities; program design and evaluation; and

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administration. This Ethics Code applies to these activities across a variety of contexts, such as in person, postal, telephone, internet and other electronic transmissions. " (Extract from APA Ethical Guidelines(American Psychological Association 2010)*).*

In the quotation earlier it can be seen that a range of end-user domains are highly relevant e.g. conducting assessments. For example, serious games for use in education would fall under the above set of regulations as would any mobile game which uses the Internet. In Table 1 below the ethical guidelines from the APA are listed against those of computer ethicist Brey.

Principle A: Beneficence and Nonmaleficence	**Justice**
Principle B: Fidelity and Responsibility	**Autonomy and Freedom**
Principle C: Integrity	**Democracy**
Principle D: Justice	**Privacy**
Principle E: Respect for People's Rights and Dignity	

Table 1 Overview of Ethical Sections proposed by the APA (2010) (left) and Brey (2000) (right).

Readers are advised to consult the relevant section on the APA website additionally the European Association of Psychological associations provides guidance (European Federation of Psychologists 2005) although covering similar topics it reduces the principles to four key areas: (1) Respect for a Person's Rights and Dignity (2) Competence (3) Responsibility and (4) Integrity.

Broadly speaking beneficence and nonmalfeance means that the study should not harm the participants and that the end objective should be to benefit those with whom they work or as Beuchamp (Beauchamp 2013) said beneficence is "all forms of action intended to benefit or promote the good of others" ((Beauchamp 2013), p1). As a starting point this should provide a strong basis for any work in serious games however, it should be noted that when commercial objectives come into play there is a risk that the benefit is not for the user but for the company, which in turn creates ethical problems.

Fidelity and responsibility covers dealing with people in particular how (in this case) the psychologist views the impact on the participants and wider society and importantly to undertake such work for little or no personal or financial gain for themselves. Integrity relates to the need to behave in a way that is open, transparent and honest. Importantly it recognises that when deception is used that the benefits for the participants should outweigh the potential harm, indeed where possible there should be no harm. If there is a risk of harm then the psychologist must correct any issues that could or may arise after the study.

Justice relates to the concepts of providing fairness and justice to all those involved in such work, in particular ensuring that all have access to the benefits of psychology as a whole and the work undertaken. In the APA example justice extends to the benefits of the studies being fairly distributed in the sense that the benefits accrue in a way that is fair to the participant, psychologists and ultimately wider society. A good example here would be how to balance the effects of traffic congestion games to benefit both the individual driver and not just the state or wider society. From

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Brey's perspective justice is based on the distribution of social goods such as freedom, democracy and privacy. For example, where a system distributes such basic elements (or indeed others) unfairly or redistributes them in a way that is unfair this is ethically and morally undesirable.

In a free society people are often assumed have the autonomy to decide for themselves what they wish to do, indeed as noted later this should not be coercive. However, as Brey (Brey 2000) notes technology itself can impact on the ability of people to act autonomously and exercise a free choice. For example, addiction to computer games is a widely debated topic (Griffiths & Hunt 1998; Grüsser et al. 2007) and within this context a serious game could create a dependency culture in terms of how people exist both outside the game (e.g. what decisions they take) and also for that matter whether the game itself creates social and other benefits which result in some form of dependency.

The final general principle explores "respect for the rights and dignity" of the participants and starts to highlight the importance of issues such as privacy, confidentiality and determination. It also explores welfare issues and specifically addresses aspects such as age, gender and race that may impact on the study or indeed be subject to bias from the psychologist. This overarching concept can also be extended to include Brey's last two points: democracy and privacy. In terms of democracy he identifies that systems have the potential to redistribute power from those who should have control over the system to those who control the system. The concept of privacy is also relevant within the field of rights, Brey describes privacy in two ways *informational (data)* and *relational (to others and our environment)*. Taking a purely information technology perspective it is clearly desirable to allow people to control what they share, and who they share it with. However, increasingly as pervasive games and technologies become popular there is a need to ensure that the other side of his argument is adequately considered e.g. relational privacy. This is essentially the freedom to be left alone by others and in turn be free from observation and interference. In the age of social networking and the increasing posting of pictures it could be argued that this right has been eroded. Also in terms of impact, people who play serious games may be reducing the relational privacy of others even if those others are not aware of such impacts (see discussion on pervasive games in this chapter).

Floridi (Floridi & Sanders 2002) provide a review and discussion of different approaches to computer ethics. At the lowest level the NA (no resolution approach) sees attempting to define an area of computer ethics as pointless and without any convincing conceptual model. A more pragmatic approach would seem to be PA (professional approach) which seeks to instil a set of values, rules and judgements based on professional standards and a concern for the user of the computing artefact (Gotterbarn 1991 sourced from (Floridi & Sanders 2002)). Two contrasting ones are the radical approach (RA) and the conservative approach (CA). The former views computer ethics as nothing particularly unique and that certain classic metaethical issues are merely transformed into the ICT domain. The innovative approach (IA) seeks to build a middle ground between CA and RA, by rejecting a purely metaethical approach from (CA) while adding to it the concepts from a more radical approach. In essence it recognises the uniqueness of the ICT domain but seeks to build on existing ethical practice.

As can be seen later in this chapter both existing ethical practices from the APA and the emergent ideas of Brey point to the need not only to base practice on externally already known challenges but increasingly the need to explore the specific new challenges posed by the various sub-types of serious games. As a starting point it is worth considering the impact of such technologies on ethical

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areas such as consent, risk and harm and coercion.

Consent

Many researchers and practitioners derive their underlying historical position of consent from the Nuremberg code, which followed on from the trials in post World War 2 Germany. Although as noted by Vollmann and Winnua (Vollmann & Winau 1996) the notion of experimental ethics in medicine pre-dates the Nuremberg code with the Prussian Ministry of the Interior issuing guidance as far back as 1891.These historical issues aside, the Code from 1947 primarily arose as a direct result of the medical and other experiments which were conducted on human subjects; without their consent and often with horrific consequences. Examples of brutal testing practices included the experiments on twins undertaken by Joseph Mengele in Auschwitz. His scant regard for ethics included acting as the doctor who screened patients for fitness; those deemed unfit were sent to the gas chambers. Additionally and without consent he would often use these screening to assess whether particular people could be used as test subjects. His overall scientific ethos broadly speaking was to prove the supremacy of the heredity over environmental influence on humans, in essence to prove the supremacy of the Aryan race. In essence he was using science to prove a particular point without considering the effects of his work in the individuals concerned. He also did not even entertain the concept of consent either in form of even making people aware of the effects of the screening but also in alerting them to the inherent risks and harm.

While it is clear that his research resulted in acts of horrendous human suffering they had the effect of alerting the wider population post World War 2 to the need for strong ethical principles. As a result the code enshrined the principles that consent must be: entirely ***voluntary***, the person must the mental ***competency*** to take the decision, the must be able to ***informed*** *if any risks to them and that they must be able* ***comprehend*** any impact on them (see Nuremberg code 1947). In essence if Mengele had been alive today he would have broken every key aspect of the Nuremberg code, and more importantly was deliberately harming the participants.

The growth of ubiquitous computing also poses some unique problems with respect to consent for example "if we continue to transpose existing models of consent to ubicomp, there is a danger that without attention, the design of pervasive systems will continue without adequate support for user consent." ((Luger et al. 2013), Ubicomp, p5)

Luger and Rodden (Luger et al. 2013) identify consent within ubicomp systems as being particularly problematic as until now it has been given only passing consideration, which is in stark contrast to fields such as psychology or medicine (as can be seen from the Nuremberg code). Furthermore, within these more traditional fields the notion of what people are consenting to is perhaps clearer due to the concept of consent being better understood, for example the study may be of fixed length and to explore card sorting skills. In ubicomp, while lab studies during the early stages may limit some potential risks, for the system to be properly tested it ultimately has be used in the wild; with the net result that the parameters of the test and possible effect on participants and other people becomes more difficult to quantify. Thus the notion of what people are consenting too and the impact becomes more vague in particular in the longer term when users notion of consent may vary overtime (Luger et

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al. 2013). The variation of consent over time is an increasing problem within the area of cloud computing services (which are often also used within location-aware games). For example companies such as Google and Facebook require people to provide explicit agreement to use their services. However, overtime new services are added which makes use of the data previously shared. Furthermore, the terms and conditions are also often modified over time. The effect being that users are essentially signing up to an open-ended consent agreement where both what data will be used for and for how long it is used remain extremely fluid. In many cases EULAs are used to provide consent and as Luger (Luger et al. 2013) notes these are often opaque and difficult to understand while (Luger & Rodden 2013) note that many go unread. Therefore while the act of giving consent to users is commendable this is often undone by the sheer complexity of such documents, the net effect being that people sign up to something which they are failing to understand. Thus breaking one of the key rules i.e. comprehensibility. Furthermore, they are often little more than contracts outlining data protection issues from the perspective of what the service supplied desires (in particular protection from legal actions), which although relevant to privacy are largely ignoring ethics.

Risk and Harm

As noted under consent a key issue is being able to quantify the risk to participants and making them aware of this. In essence identifying risks is about being aware of the potential harm that any serious game (or study) may result in. Traditionally harm prevention has tended to focus on physical body for example through injury due to the test procedure. However, the definition of harm extends far beyond the physical body to anything that may have a negative impact on a person. As noted by (Shahri et al. 2014) people can perceive enterprise gamification applications as having negative impacts ranging from spying through to increasing workplace tensions. Furthermore, they could be used to inform decisions about hiring, firing and promotion. Thus even a simple serious game that aims to improve communication between employees could have detrimental effects; even if neither the designers nor employers intended this at the outset. Even cultural differences can play a role in the potential negative effects of serious games. In one anonymous example mentioned during the CHI 2013 conference in Paris, a Japanese company had implemented a gamified application and many of it's junior employees did very well and collected more points than the senior managers. However, after a short while it became clear that this was unacceptable in the organisation and the junior employees started to "lose" more frequently in order to allow their managers to remain at the top of the scoring tables. While it is not clear what if any harm was done in this case there is a risk that the introduction of such games could undermine workplace coherence and can be used as methods to single out employees that could be seen as a threat to their managers.

In 2009 serious games for health were estimated to be generating sales of $7bn (García Sánchez et al. 2012) . These games or gamified applications can for example encourage people to jog more frequently, change their diets or engage in alternative activities in order to remain active. In each case however and unlike close-contact studies (in a lab for example) the publisher is not in a position to assess the inherent risks to a particular individual if they undertake certain actions. Indeed the most they can do is point to user in the direction of their doctor for advice and resort to overly complex EULAs.

Coercion

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With respect to coercion it is important to consider both indirect (even if this is subtle) and direct coercive approaches. As an example of indirect coercion, imagine an office based serious game that is designed to train people to optimise their daily productivity around aspects such as completion time and success rates. The game itself may have nothing to do with their actual work (i.e. working in a financial office) but it would be designed to improve cognitive abilities relating to particular work tasks. The employees could also be totally free to choose whether or not to play this game. The employees are also informed about what the game will do i.e. improve their cognitive skills and that there is no risk to their health - they are even invited to sign an informed consent form. In every sense of the word this particular serious game is complying with ethical requirements - and what's more a data protection policy is even provided. However, as many employees play the game there has arisen a small competitive element in the office and those who are perceived as not playing the game face some social pressure to take part. Here although there is no particular threat made to employees who perform poorly or who refuse to take part there is a clear "implication" in the air of the office that they are expected to do so. Also it is unclear if the management make any particular use of the data obtained when undertaking staffing decisions. In this case the coercion is there but more subtle than actively forcing people to take part. In contrast direct coercion is perhaps clearer to define and focuses on threats made against the person or persons playing the game in order to force them to take part. This could include sacking people if they do not take part or denying them certain employment opportunities through to clear and specific threats against them in other ways.

Privacy

There are many issues to consider regarding privacy and serious games especially given the recent growth in the concept of medically orientated games (Uzor & Baillie 2013b; Alankus et al. 2010). The issue of privacy is suddenly much more acute and important to maintain in comparison to other game genres as the designer is now manipulating patients. However, the information must be shared when it comes to these games otherwise the researchers and medical staff will not be able to assess whether or not the serious game has had the desired effect e.g. made the person physically or mentally better. As is stated in the introduction serious games can "often" obscure from the end user the actual underlying and overarching goals of the game. For example (Uzor & Baillie 2014) provided exergames to older adults at risk of falls, the actual games mimicked the exercises in the British National Health Service falls booklet but this may have not been obvious to the falls patients. For example in one game the player had to assume the role of a horse racing jockey and make their horse jump and clear 10 hurdles in order to win the game. It was not obvious to the patient that what they were doing was in fact a series of 10 exercise squats and that their performance data was being tracked. In this example there is an issue with obfuscation to the end user along with problems relating to tracking and logging user data and how it is stored, manipulated and shared. With respect to more traditional games e.g. Assasins Creed it would not be such a major concern, but it does become an issue as regards serious games as the data becomes much more than merely a game score but an actual indicator of health, potential education achievement, anti environmental or anti social behaviour. The data collected therefore by these games suddenly becomes interesting to a much wider number of interested parties e.g. police, health practitioners, insurers (car and health), local and environmental bodies etc. Given this obfuscation from the end user is it even possible for the end user to give "informed consent" in the way that was outlined earlier? In a recent study by (Morrison et al. 2014) they found that even though they had obtained the consent from their mobile game users when they downloaded and installed the app which explained in detail what the app

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would collect, problems arose when an update after a week of use indicated what had been collected on them. The result was that many users expressed outrage and deleted the app. Therefore even when users seemingly agree to data on them being collected and used problems remain if their expectations do not match what they later perceive to be reality.

As a result there is a need to move to a model in which consent is not just collected at the outset but also during the entire use cycle. For example, providing a copy of the data collected to the game participants with examples of how the information could be visualised and used. At this point consent could be requested again. However in the short term the challenge is to provide as much information to the user as possible regarding data collection and use without giving away too much of the underlying game logic so that they can undermine the operating of the game.

Trust

At the moment the vast majority of research which has been published as regards games, serious games and trust has been focused on education (Anwar et al. 2006; Jerman-Blažič & Klobučar 2005; Malheiros et al. 2011) and in particular on training. As serious games evolve into other spheres e.g. rehabilitation, transport, mental health and so on it will be interesting to see what the differences are as regards to trust and the end users' perception.

As a consequence of this evolvement there is a need to develop ethical practices in order that users have the correct expectations regarding the collection of their data and how it could be used. Prior work has shown that when users do not understand how a technology is tracking them that a break down and reluctance to participate can occur (Baillie & Morton 2009). In order to develop this understanding studies must be undertaken whenever a serious game is deployed by an organisation that collects or stores personal data. Research suggests that trust can be important factor influencing user acceptance (Anwar et al. 2006; Riegelsberger et al. 2005; Adams 2001). When concerns around the collection of data are not addressed, the potential consequences include – low morale, chilling effects, reduced commitment to the goal of the game or the organization deploying it and lack of interest in playing the game (Fairweather 1999; Ariss 2002; Snyder 2010; Chen & Sanders 2007).

Although some research has been carried out on the impact of privacy issues on educational serious games (Anwar et al. 2006; Jerman-Blažič & Klobučar 2005; Nejdl & Wolpers 2000), it has focused on either types of data that have low sharing concerns e.g. reading materials to high sharing of data e.g. individuals scores and date of birth etc. There is currently a gap in the literature regarding trust issues of learning systems: (1) how learner-users perceive and react to different data practices and interactions with other stakeholders, and; (2) what impact this can have on system acceptance and effectiveness. In conclusion there is a lack of methods to help developers incorporate trust considerations into the design of their serious games.

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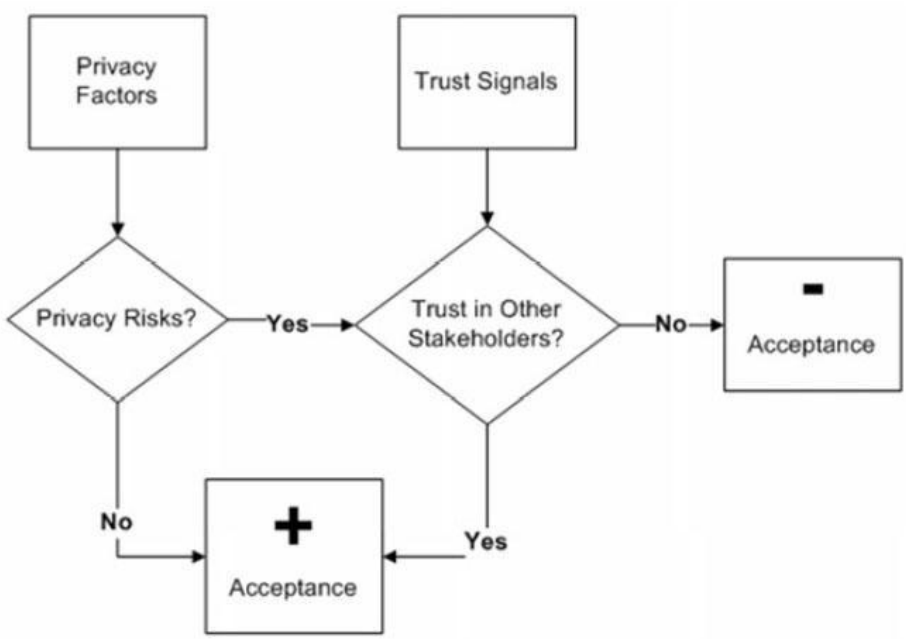

Figure 1 Trust-Privacy Interaction (Malheiros et al 2011)

One way of starting to incorporate concepts of trust when designing is to use the model provided by (Malheiros et al. 2011) when creating the structure of the game (see Figure 1) and then to think about using one of the models outlined in the transparency section (see later in this chapter).

Games

According to Sicart "a game is a formal set of rules that project a fictional world that a player has to experience" ((Sicart 2005) p14) and importantly "a game only exists when played, even though it is possible to describe its rules" ((Sicart 2005) p 14). Furthermore, drawing on Juul (Juul 2003) it should be noted that the game actions are voluntary and that the game outcomes should depend on the actions (this is related to the concept of autonomy discussed later). Huizinga (Huizinga 1955) provides a more formal definition arguing that games exist within a Magic Circle and that such a circle consists of a range of facets outlined below. However, as noted later in this chapter both the views of Sicart and Huizinga are debatable when employed to serious, pervasive or persuasive games.

- Huizinga's Magic Circle:
  - Rules (they only apply within the game space)
  - Objects (assume a context and range of effects within the game itself)
  - Location (a game of bowls is limited to a particular bowling alley)
  - People (namely the players)
  - Time Period (the game ends at a given point when a set of conditions are met)

Furthermore, Sicart notes that game designers often provide affordances within games with the sole intention of shaping behaviour. These affordances can also pose ethical problems both in terms of how the game is played (e.g. discouraging certain actions or players from taking part). Although from traditional games he pointed out that players often twist rules and indeed in World of Warcraft the designers had to provide new affordances in order to overcome this problem. It is worth therefore

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considering the different types of rules that may exist and that are outlined below (see Salen & Zimmerman 2004):

- Operational
- Constituative
- Implicit

Operational rules are those which are provided and that must be adhered to in order to play a game, for example rolling two dice and moving clockwise around a Monopoly board. Constituative rules are those that exist below the level of the operational rules and are embedded in the game itself (e.g. the range of possible moves in a game of chess). Implicit rules are those that arise during a game and those that reflect good sportsmanship or desirable game behaviour. As Salen and Zimmermann point out these can change between different game instances and between different sets of players. Regardless of which type of rule they should exist to allow players to achieve the game objectives, even if they act in a way to slow down such progress (e.g. rolling dice and getting a low number).

The ethical nature of play is also shaped by the types of players; a naive assessment may lead us to conclude that there are players to adhere to rules and those who do not. In this simple ideal world the objective would be to stop the “bad” players from undertaking improper activities. However, such an approach ignores the wider spectrum of player types that impact on ethical play within games. As noted below, Salen and Zimmerman identify a range of player types, each with a unique set of goals and objectives but also how they interpret and implement their adherence to rules.

- Standard
- Dedicated
- Unsportsmanlike
- Cheater
- Spoil Sport

The standard player follows the rules and has a genuine although perhaps not passionate interest in the game being played. This contrasts with the dedicated player who could be considered a hard-core gamer who is dedicated to winning and possesses a strong desire to win. Both of these types of players also posses a lusory attitude, this means the player is willing to adopt the game rules in pursuit of an objective. In the middle of the player group are unsportsmen like players who follow the letter of the rule of book but twist them in pursuit of winning.

People play computer games whether serious or for entertainment purposes due to a range of intrinsic and extrinsic motivations. In essence for their own benefit with no external rewards (intrinsic) or when there are specific external rewards (extrinsic). The former could be simply to accept and complete a challenge and to fulfil particular personal goals, while the latter could include external financial benefits or even social recognition among peers when a high score is obtained. Both intrinsic and extrinsic incentives have certain limitations, for example over time players may become less interested in the intrinsic benefits of such a game, thereby reducing their levels of participation. Extrinsic incentives also have to be decided carefully, for example ensuring that they are not simply given out for undertaking activities where the same degree of participation would be obtained purely through intrinsic motivation. They also suffer from an erosion effect over time, in particular when

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people come to expect the use of external incentives in order to take part. Regardless of the type of serious game the form motivation can raise serious ethical issues, for example disproportionate rewards could lead to radical changes in both in-game and outside game behaviour that may have long-term negative effects. They may also attract people to take part who are not the target group and instead act as a deterrent to some people. Also extrinsic motivational factors such as peer pressure may come into effect that could be psychologically harmful for the players. Therefore from a purely ethical point of view the incentive has to be considered as much as the desired game actions.

In addition to basic game mechanics and motivations, one major aspect of game design is to maintain a sense of being immersed in the experience, this is often referred to as flow (Csikszentmihalyi & Csikszentmihalyi 1988). Flow is the total absorption into a given task as a result of being motivated to partake in it. The concept of flow was extended by (Sweetser & Wyeth 2005) to computer games and is deemed to arise through a variety of factors: concentration, challenge, skills, control, clear goals, feedback, immersion, and social interaction. A good example would be a person playing a 3D shoot-em-up and being almost unaware of the surroundings or those around them. A large part of being in a state of flow relates to the underlying personality traits of the individuals, this can extend from the propensity to feel present in a mediated experiences (Witmer & Singer 1998) and it could be argued it depends on how the particular gaming experience fulfils the personal objectives of those playing it. In particular whether the goals of the game match the goals of the players, either in terms of play (e.g. completing a level) or higher level constructs such as self fulfilment or fulfilment with respect to wider society. Within Self determination theory (SDT), Ryan et al (Ryan & Deci 2002) indicate that human beings have basic underlying needs such as: competence, relatedness and autonomy, and when these are met people will gravitate towards experiences that provide them. Competency is when people feel they are affecting the outcome within the wider social environment and are given opportunities to exercise and express their preferences; in a gaming context players seek challenges in order to feel a sense of success. It could therefore be argued that a sense of challenge is fundamental part of human development and when this is provided in computer games a basic need is being fulfilled which may in turn lead to players experiencing a feeling of flow. Importantly Ryan indicates that competence is not an attained skill but an on-going desire. Thus completing a level and feeling competent will not be an end in itself. Relatedness is connected to feeling part of a group while autonomy relates to the feeling of being in control of one's own behaviour and as noted earlier this is also a key ethical requirement. Ryan et al do however point out that their definition of needs and motives is quite different from personal motives or desires. For example basic survival (needs) are not part of personal motivation and desires but importantly if these basic needs are not fulfilled people may turn to other motivations and desires as a form of substitution. Furthermore, that such personal motives and desires may change over time. It should be noted that Ryan and Rigby et al also found that the needs approach from SDT applied also within single and multiplayer games; although to a more limited degree within single player games (Ryan et al. 2006).

To summarise, a game is something that exists beyond the actual underlying mechanics (such as rules, people, objects and locations) and is instead something that exists within a given context. The desire for those to take part in the game and achieve the desired goals is determined by their underlying needs, motivations (intrinsic and extrinsic) and personality traits. A successful game should bring together all these elements in order to encourage participation and ultimately (if desired) a feeling of flow. The situation is however complicated by issues such as the nature of the rules (both operational and implicit) and also the range of players who take part from the cheater through to the

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ideal player. From an ethical perspective this will give rise to a series of problems ranging from not misusing an understanding of the players underlying needs or motivations and how to ensure (especially in more pervasive and social games) that the players are aware of any implicit rules. Furthermore, while autonomy is a desirable feature both in terms of making ethical and in-game choices it remains problematic in situations where the degree of free choice within a serious game may be limited by work or social context.

Types of Games

Serious Games

An early example of a non-computer based serious games is Kriegspiel (war game), it dates from 1812 and was used for training the Prussian and German Armies. Military training using games (for a discussion see: (Smith 2010)) has also been extensively used. Within this context the issue of ethics and safety impact upon both the players and potentially those who the player may encounter in actual war zones. Outwith war, serious games are often used to teach people about issues that can have long-term effects on their lives. In essence they use the fun element of games to achieve a serious benefit for the player and other stakeholders. For example, serious games could in theory be used as a way to assess people, therefore having long-term consequences for their future careers and increasingly their health.

Pervasive Games

Pervasive games on the other hand are not bound by as many constraints as traditional serious or normal games.. According to Montola (Montola 2005) they are not spatially, temporally or socially bounded by Huizinga's Magic Circle (see earlier). For example more traditional games such as geocaching can be played in any location where a cache can be left and/or found by players. Also the number of players may vary during the game and there is no time limit on the total game play and in theory the game could last forever. Within the serious gaming context such examples include Timewarp which was a mobile mixed reality game played in Cologne, Germany (Blum et al. 2012). Here players would walk around the Rhine bank area in central Cologne looking for characters and objects within different time periods, including the future. Although the future aspect had no educational value the underlying historical elements aimed to make people aware of some aspects of the city's past (it should be noted the players were not assessed directly for their knowledge). Although the game took place in a relatively spatially defined area it did alert the developers to some challenges involving players and non-players with complex urban environments.

In common with other products and services, serious games are also increasingly being played on mobile devices such as tablets, mobile phones and augmented reality visors. These pervasive games bring with them a set of ethical challenges (as noted earlier) as they often seek to extend gameplay beyond the magic circle (see earlier work by (Huizinga 1955)). While these facets may apply within a pervasive game it is no-longer as Montola describes: spatially, temporally or socially bounded. Taking the last aspect first the lack of social bounds means that serious game designer must start considering the role of others within not only the design of the game but also from the perspective of ethics, privacy and trust. Take for example the list of player and non-player types that may either by impacted by or impact a pervasive game (Montola 2005):

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- Player: someone who influences the game
- Non-player participant: lack of personal game goal, e.g. referee
- Spectator: are aware of game and can be actively involved, but cannot directly influence game perhaps only indirectly
- Bystander: unaware of on-going game, and have no ability to participate in it. They are also insulated from taking part in it.

As can be seen above there are varying degrees of participation within pervasive games, while players and non-player participants probably provide some form of consent to take part, it is debatable whether any consideration has been given to spectators and bystanders. Indeed, it is also difficult to assess the precise impacts and risks that particular games will have on them and consequently what degree of consent may be required. Take for example a game where one challenge is to locate a stranger in the street and photograph them after they answer a question about the locality. They collect no points and derive little if any benefit from the game itself but at the lowest level have their day impacted upon by taking part (although perhaps not in a negative way). However, it is unlikely that they are asked to sign any agreement or indeed that they are fully aware of how their picture or data could be used in future.

In addition to the different range of people who may in some way be connected to the experience, there are also (and in common with other game types) a range of players which apply for example those who adhere strictly to the rules but maintain the spirit of the game through to those who adhere strictly to the rules but not the spirit of the game finally to those who simply break them (see earlier summary by (Salen & Zimmerman 2004)). Within a traditional (i.e. not a serious game) magic circle bounded game the potential impacts are for the mostly confined to the game itself, although some players may be angry or frustrated with those who have cheated after the game. In contrast in a pervasive game where the authors may have limited control over where it is played, the effect of either breaking the rules or not playing in the spirit of the game could be harmful (e.g. in the case of traffic games). At the lower end of the spectrum as the game is perhaps less time bounded in time the effects of "foul play" could last significantly longer than within a game which can be easily ended due to a time limit. In both cases the potential health and social impacts could extend far beyond the actual playing time.

Persuasive Games and Gamification

Persuasive games draw on the wider area of persuasive technologies which "attempt to shape, reinforce, or change behaviours, feelings or thoughts about an issue, object or action" (Fogg 2002) for example reducing smoking or other health improvements. It should be noted that persuasive games need to not use any technology however for the purposes of this chapter the focus will be on games delivered via some form of computer mediation. Although there are differences from gamification (discussed later) there are a number of similarities namely (1) they use technology (2) aim at affecting the attitudes of people such that (3) their behaviour is altered. According to Hamari et al (Hamari et al. 2014) the topic area emerged in the 1990s with the main writings arising from 2005 onwards, with 2013 being abundant in terms of publications. This is perhaps best emphasised with the emergence of the PERSUASIVE conferences which specifically tackle the topic from a range of perspectives. Therefore, although older than gamification it is still a relative new field both technically and from the perspective of ethics, privacy and trust. Oinas-Kukkonen et al (Oinas-kukkonen & Harjumaa 2009)

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define a number of design principles for persuasive systems (see below), however the primary focus in this chapter is on aspects relating to credibility.

1. Trustworthyness
2. Expertise
3. Surface Credibility
4. Real-World Feel
5. Authority
6. Third-Party endorsements

The concept of trustworthyness was discussed earlier, however generally the more trustworthy the system the more persuasive it will be. Expertise is also a key component as the system on the face of it should possess knowledge and experience and competence when attempting to persuade the user. Surface credibility is also important as people tend to make quick so-called first impressions when deciding on a system. Real-world feel relates in some ways to the transparency, in that a system that makes the organisation and people behind it clear should have more credibility. Authority primarily relates to whether the system has clear outside authority given to it e.g. from a government agency. Third-party endorsements relate to others endorsing a pervasive game and thus boosting its perceived credibility. Collectively these elements should allow for persuasive system to be more effective, in turn though the use of certain aspects may also create ethical issues. For example a trusted company endorsing a product that would otherwise be considered ethically dubious by the public.

Gamification

In many ways gamified applications should be viewed as an extension to persuasive games in that their explicit intention is to change behaviour whether by making this clear or through more covert means. Therefore there is a strong overlap in the ethical problems that may arise in pure serious games and within gamified applications. Gamifications' growing popularity, clearly persuasive objectives combined with relative immaturity should lead to concerns with regard to ethics privacy and trust.

The term gamification has come into widespread use in recent years with it broadly speaking being defined by Deterding et al. (Deterding et al. 2011). Gamification can be thought of as the application of game-like elements (e.g. points, leaderboards and badges) to non-game environments such as health and traffic. There are many contrasting views on the merits of gamification with its father figure Deterding offering no perceived judgements regarding it's value although it would be hoped that a system would bring about benefits for its users. This is in stark contrast to Zichermann (Zichermann & Cunningham 2008) who see it as little more than a way for a company to achieve its corporate profit driven policies. In order to illustrate this point take two gamified applications LeaveNow and FourSquare. The former is an academic research tool designed to reduce traffic congestion; while the users may derive benefits such as reduced time spent in traffic beyond the data collected the researchers involved and the institution will make no profit. Indeed even the data collected will only be used to improve future versions; again there is not personal profit motivation involved. In contrast FourSquare lets users check in at locations, receive points and perhaps also discounts from the various sites. It is collecting such data to share with its business partners who may be able to offer incentives to their potential customers. In this case the data is probably being sold and the businesses

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involved also benefit. Therefore while the user may derive some fun from using the application, the real benefits go to the businesses involved. This is perhaps not immediately obvious for end-users. While there is significant research being undertaken into gamification, the significant interest that it has received from business is a clear indication of the benefits that they perceive from it either in the form of selling more products and services or improving employee performance. In the case of the latter (Shahri et al. 2014) noted that gamification can bring excessive tension and pressure to the workplace.

As (Versteeg 2013) argues it is essentially the fun factor which is used to tempt people to change their behaviour and that gamification has a number of facets which make it explicitly persuasive in nature and that these elements give rise to ethical concerns. Drawing on the work of Fogg (Fogg 2002), Versteeg argues that gamification can often exhibit the following facets:

- Reduction; persuasion through simplification of the task
- Tunnelling; persuasion via leading people through a task
- Tailoring; providing user specific information to increase chances of persuasion
- Suggestion; suggesting an action based on underlying motivations
- Self Monitoring; allowing the user to view their progress towards a goal
- Surveillance; making user aware they are being watched and providing options based on this
- Conditioning; providing rewards for an action(s)

A critical point of the above list is that while these techniques may be used frequently by the designers of gamified applications; the users may not be aware they are being used. Indeed this may be a specific desire by the designers. As a result these comparatively subtle approaches may lead to a situation where behaviour change is encouraged to meet the goals of another party and not that of the player, a good example would be suggestions in online shopping applications or where surveillance is used to reduce behaviour of benefit to the players but which does not meet corporate objectives.

A number of authors have developed ethical guidelines for gamified applications (Versteeg 2013; Berdichevsky & Neuenschwander 1999; Marczewski 2013). Zichermann provides three foundational concepts which can broadly speaking be defined as: (1) Designing systems which help individuals/organisations reach their goals by aligning with their values (2) Make the objectives and purpose transparent (3) Make results available (where legally possible) in order to promote best practice. Marczweski arguably goes further and again defines three major areas: (1) Honesty (2) Transparency with regard to data collection and aims etc (3) Provide best service quality possible. Marczweski extends honesty to include making potential customers and users aware of the limitations of gamification and more importantly to state that gamified applications should not collect data that users would not otherwise choose to share. Both Marczweski and Zichermann provide useful sets of guidance however, although they deal with issues such as transparency they are limited and not in sufficient detail. Instead they are perhaps best thought of as a set of overarching guiding principles.

Berdichevsky (Berdichevsky & Neuenschwander 1999) and Versteeg (Versteeg 2013) provide a far greater set of ethical guidelines. Although in the case of Versteeg greater effort is made to take into account the holistic process from design, implementation through to testing. Berdichevsky shares some similarities with the earlier sets of ethical guidelines. However, a fundamental change is that they place responsibility for all possible outcomes of using the persuasive technology on the

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designers of the system and that the designer would also be prepared to use the same technology. Berdichevsky further adds that the use of the technology should not in itself be the reason for undertaking a particular form of persuasion and that persuasive technology should only be used if the same actions would take place without the technology. In essence these three points move the focus from simply undertaking gamification to one which is more based on underlying ethical concepts e.g. only do to others what you would do to yourself and that it is irrelevant how such persuasion is undertaken but that fact that it is being undertaken. While these are beneficial aspects the idea that the designer should be responsible for all possible forseen and unforseen outcomes is perhaps at best impractical. Indeed Shahri (Shahri et al. 2014) noted that workplace gamification applications can result in increased divisions between staff and hence tension, be perceived as a method of monitoring, can erode privacy and may be seen as a way of exploiting employees. While there are no doubt some employers who have these specific goals it should be clear that for the most part such by-products of use are likely to be harmful on the users and ultimately wider society (or the workplace).

Versteeg (Versteeg 2013) proposes a comprehensive approach which places emphasis on the entire process of developing gamified (persuasive) applications. It aims to bridge what Versteeg sees as the gaps identified in the other guidelines with a thorough grounding different ethical approaches (see Versteeg for a full review). Versteeg's framework consists of four main elements (1) Moral Principles and Values (2) Conceptual Investigation (3) Involvement of Stakeholders (4) Evaluation and iteration. The work draws on aspects such as participatory design and traditional ethics, in particular the proposed frameworks main strength is that it includes all those affected by such as system not just the end-users. The moral principles and values component shares certain aspects of previous ethical guidelines however also includes aspects such as (1) take people towards a path of virtue not one of vice (2) all users should be treated equally (non-discrimination). As acknowledged by Versteeg it is not an exhaustive list of concepts or a complete framework.

Discussion

While there are differences between game types e.g. classic serious, persuasive, pervasive games and gamified applications it is increasingly the case that the boundaries between them are becoming blurred. For example, serious games may include pervasive elements and often the desired outcome of a serious game is behaviour change (or learning of a new skill) outside of the game itself. Therefore, there is a need to explore overarching ethical concerns across the different game types from the perspective of core gaming elements such as: rules, people, objects, locations and time periods (Huizinga 1955). By using these elements as a way to define the core elements games or indeed gamified apps it is then possible to see how they impact underlying ethical issues impact on all people (not just the players) and minimise negative impacts. Therefore, in the following section a set of overarching concepts and guidelines (in the form of questions are presented) and in common with Fogg (Fogg 2002) and Versteeg (Versteeg 2013) the involvement of stakeholders is an important part of the process. Underpinning this is a return to the basic moral concepts such as consent, autonomy, beneficence, fidelity and responsibility, integrity justice and respect for rights and dignity. As an example, taking informed consent as a core part, a serious game should support: ***voluntary participation***, ***competency to decide to take part***, ***informed of all aspects*** and ***comprehensible information***. A typical example would be within the people category and concept of consent, i.e. while a player may consent to take part the wider population or indeed others who are not directly playing may not have done so but still be impacted by the results of the game. However, it should be noted

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that obtaining consent from a possibility unlimited number of people would be problematic.

The guidelines as they are presented specifically build on both the underlying positions relating to ethics, privacy and trust but also the more applied ideas presented by the various computer, persuasive and gamification ethicists discussed earlier. However, in contrast with higher-level approaches the intention in the remaining section is to ask specific questions which open up the ethical debate during the design process so that the finished serious game has hopefully resolved any potential ethical problems. Thus ethics, privacy and trust are embedded in the concepts rather than always being explicitly stated also specific technical aspects such as encryption or data formats are not discussed. Furthermore, the process of obtaining requirements and feedback from players is not discussed. The concepts are not mutually exclusive and similar issues will often be addressed from multiple perspectives. Also not all concepts and guidelines will be relevant to all serious game types.

Identify Individual, Social and Corporate Objectives

Serious games will have some set of overall objectives, whether this is to enhance employee performance or persuade people to undertake different commuting behaviours. Often these objectives can be contradictory for example a company may wish to improve employee performance without paying extra salaries while the employee may view the game as a way to obtain promotion or a pay rise. On a social level a game may seek to improve communication between people in an office.

- What are the objectives?
- Who has these objectives?
- How does the game align with pre-existing objectives of the individual and the organisation (if required)?
- What contradictions are there?
    - e.g. Are the corporate objectives different from those of the individual? How is this situation resolved (if at all)?

Benefits and Risks Impacts

The game should first and foremost provide benefits to those who take part, additionally if there are wider societal or corporate benefits these should be taken into account. There will be some link between the objectives and the benefits however there are some subtle differences. Benefits should be considered across all stakeholders from players, through to the organisation, developers and third parties (e.g. work colleagues).

- What are the benefits?
    - Will these benefits have a direct or indirect negative impact on anyone?
- Who benefits (individual, company, society)?
- What is the balance of benefits between stakeholders?
- What competing benefits are there in the system?

- What are the risks?
- Who experiences these risks (individual, company, society)?

- What is the balance of risks between stakeholders?
- What happens in the event of failure?

Rules and Styles of Play

As noted earlier games have a variety of player types from those who adhere to the rules, to those who cheat. Increasingly within gamified applications there is a risk that the behaviour of players who adhere to the rules of a game but not its spirit may have an impact on others. For this the designer should identify a set of impacts.

- Are players aware of the different rules both those explicitly stated and those that are implied within the context of use?
- Is it possible to play by the rules but also play against the spirit of the game?
    - What impact will this have on the overall game and other players?
- What impact will different player types have on the game objectives and other players?
- Are rules and other mechanisms used to change the users playing habit in a way that encourages them to follow a path that they would find not to be beneficial to the non-game environment?
- Are the rules used going to aid the players in achieving their particular goal? If not is the restriction harmful (note; rules can be used as a way to increase difficulty, hence they should also reflect the objectives of the game and the underlying motivations and needs of the players).

Transparency

Transparency relates to a number of key facts extending from benefits, risk and harm through to the use of data. A key problem arises when certain aspects of the system may need to be hidden from the user; in particular its real objectives related to this are problems with deception of players etc. Where possible such aspects should be avoided but there are times when they may be necessary. Furthermore, transparency also relates to players being aware of the impacts of the game on others, or indeed their awareness of the range of rules that may apply.

- Are the goals of the system clearly stated?
- Are the benefits and risks clearly stated?
- Are all rules clearly stated?
- Are players aware of the impact on non-players and the wider environment?
- Where deception is used can this be avoided or mitigated in some way?
- Are data and privacy issues clearly stated?

Temporality and Use

Increasingly games are played over a longer period of time and certain pervasive and gamified applications may have no particular temporal limit. In this context the impacts of the serious game need to be considered over a longer period of time. In particular benefits external to the game environment could outlive the time of play while negative impacts should be avoided. Negative effects could include social and peer pressure issues. There are also issues to do with updating or changing

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a game and whether the player has consented to take part. Also when playing a game care should be taken to avoid any indirect negative impacts.

- If the game has a finite end point are any benefits lasting beyond this point?
    - Consequently are negative impacts contained to the time of play? If not what effect will they have and for how long?
- For the duration of play (use) are there negative impacts on aspects of the players work or personal life?
- For the duration of play (use) are there negative impacts on aspects of the wider environment e.g. locations or other people?
- Are gaming elements, privacy and trust aspects liable to change over time? If this is the case what degree of awareness and consent are provided to end-users?

Motivations, Incentives and Flow

The underlying needs and motivations of players will make a significant impact on the use, adoption and success of serious games (across all types). However, while fulfilling needs and allowing games to match the motivations of the players may be perceived as a good thing it is not without some inherent risks, in particular if an individual has an addictive personality which could result in them being overly manipulated by a serious game.

- Are methods provided to ensure that competence is rewarded?
- What are the motivations of the users to play the game both extrinsic and intrinsic?
    - How are these motivations manipulated or utilised within the game for example through incentives?
- Are the benefits of using the system the main reason for its' use as opposed to extrinsic incentives awarded? For example if a cash payment were to stop would the game or specific outcome still be seen as beneficial?
- Is there a risk that heightened attentional focus on the game (sense of flow) could result in the players playing the game for its' own sake rather than for the specific objectives/benefits it sets out to achieve? Here the objective is to avoid addiction to a particular game or situations where judgement with respect to the desired real world outcome becomes clouded due to particular game structures.
- Are the incentives provided necessary for the player to maintain the social, personal or work status? If these were not provided would any harm to them arise? For example lack of points in a work place game may result in social exclusion or bullying.
- In the event of termination of the game have the impact on players, data policy and wider society been considered?

Autonomy

Players should be free not only to chose how to take part but also how to undertake actions within any serious game and particular attention should be paid to items which are used to influence behaviour

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such as tunnelling, surveillance or suggestion. For example, if surveillance is being used are they genuinely able to opt out or behave in ways that they would choose normally to do?

- Can players excise a right to leave the game without negative impacts?
    - If not what impacts may occur?
- Are players free to decide on their own course of action (including leaving)? In essence are forms of direct and indirect coercion avoided.
- When methods are used specifically to channel or modify behaviour (e.g. tunnelling) is this approach necessary, appropriate, not harmful and in the players interest?

Privacy

This should relate too all parties, not just players for example by-standers or spectators. It extends from if data is stored on people to how is should be used and any sharing or destruction policy. A significant amount of the data privacy issues are also related to transparency and trust aspects.

- Which groups of people are having data stored directly or indirectly on them?
- Have users and others expressed explicit consent for data to be stored on them?
- Have users and others expressed explicit consent on how such data will be used?
- What unnecessary information is stored? Only data which is required to allow the smooth running of the game should be stored.
- Is information only stored for a minimum period of time necessary?
- Is there a data destruction policy?
- Where data is stored anonymously how easy is it to still decode the data such that players and others may be identified?
- Will data sharing and use change over the lifetime of the game and is the clearly articulated to the user?
- What policies are in place to ensure that non-players privacy is maintained? This is more relevant to pervasive games.
- What policies are in place to ensure that the desire for privacy in certain locations is maintained while a game is being played? This is more relevant to pervasive games.
- Where sensitive information (see next section) may be stored or used is its storage and use minimised? If possible no such information should be stored or used.

Rights and Respect for Players

Players' background such as gender, race, religion, politics and sexual orientation should not be misused when designing serious games. However, it should be noted that certain serious games may target a particular group of people for example in order to educate them about a particular topic. Where this is the case the benefit should be clear and should not be to the detriment of them or other people. In this context the term profiling this is meant with respect to selecting a group of users based on their backgrounds so that they take part in a game or that the game responds to such information.

- Where profiling is used is this related to providing a benefit for that particular target group?
- Where profiling is used are negative effects for those not selected removed? For example if the particular background of an individual provides them with an advantage this should not be

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at the expense of those without such a background.

- Are issues related to player background which may have negative impacts on players avoided? An example here would be in an office where some new employees do not speak the national language fluently. They are disadvantaged when playing the game which may in turn have negative impacts on their careers.
- Are all game design concepts, data privacy standards and incentives easily comprehensible and beneficial for all potential players?
- To whom does liability fall in the event of an ethical, privacy or trust problem? There should always be someone who is responsible.
- To what extend is the responsible party (parties) aware of the ethical privacy and trust issues?
- What procedures are in place to ensure that the developer/project instigator is held responsible for actions both directly and indirectly resulting from playing the game?

Trust and Credibility

Trust is not only whether a system is trustworthy but whether perceived trust can act as a way to manipulate players. For example, XYZ is a well known and respectable brand using deceptive tactics in order to change behaviour or collect excess data. Trust is also related to aspects such as transparency that were outlined earlier.

- What and how are external methods such as branding or third party endorsements used to improve the perceived degree of trust?
- Would the system be as trusted by players ***without*** external trust approaches?
- Are third party and external endorsements being used to manipulate the players' behaviour?

Relationship between The Gaming Context and the Technology

Serious games are ultimately about bringing a benefit to the player in their everyday life, whether this is for work, sport of pleasure. Also as noted by (Brey 2000) the technology cannot be isolated from the wider impact and should also be considered.

- Does the game support a benefit outwith the game environment?
- Would the benefit exist without the game? If not, to what extent is this new benefit desirable?
- What technologies are being used to collect data and how might these impact on user behaviour?
- Are the technologies used likely to have an impact on those not playing the game?
- Are specific interaction approaches being used which are designed to shape behaviour and what is their impact?
- Does the game use coercive approaches to restrict or eliminate player choice? For example is a benefit withdrawn that will have a serious negative impact on the player or is a specific interface/interaction type used to coerce players.

The previous concepts and guidelines provide a list of issues to explore when designing serious games and also evaluating those which are either under development or already being used. As noted by Versteeg (Versteeg 2013) an iterative development model is highly relevant and beneficial in

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this case, in particular when used with approaches to correctly identify users, context of use and requirements. It should be stressed that it is not intended as a tick-box style assessment or a method to provide an ethical compliance score. Finally and indeed importantly would those responsible for the design and rollout of a serious game use it themselves?

Conclusion

This chapter started with a discussion on ethical issues initially outside the domain of serious games and then within and across various types of serious games. It highlighted problem areas through an examination of various types of serious game with an emphasis on looking at common issues that may arise, or where differences may also result in problems. In doing so it sought to specifically address the earlier high-level identification of the issues highlighted by (McCall et al. 2012; Koenig et al. 2012). The discussion section provided a (non-exhaustive) list of concepts and guidelines in the form of questions that are intended to provide a way to examine designs and currently implemented systems. In what is perhaps a shift from existing approaches the ethical discussion and subsequent context also includes unintended impacts on third parties (i.e. non-players), through to how consent varies over time. The concepts and guidelines do not aim to provide an assessment mechanism but rather a method by which practitioners and researchers can consider ethical issues and start the discussion on potential weaknesses in their own systems. They are also intended to provoke discussion and provide a starting point upon which they can be refined and developed.

Acknowledgements
The work in this paper was partially funded under various project grants (I-GEAR, LOCALE) provided by the Fonds de la National Recherche, Luxembourg. The authors would also like to thank the contributors to the Workshop on Exploring Ethics, Privacy and Trust in Serious Games at ICEC 2012 in Bremen.

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