Gamification of Prosocial Learning
for Increased Youth Inclusion and Academic Achievement

D2.2
Prosocial Game Scenarios
This report aims to provide a high-level collection of prosocial game scenarios based on core prosociality domains as described in D2.1. It also aims to provide an outline methodology for selecting Prosocial Learning Objective (PLO) scenarios. This deliverable acts as a direct input into D2.5 and a starting point for D2.6, the Prosocial Game Design Methodology.

**Author(s)**
Kam Star (PLAYGEN), James Allsopp (PLAYGEN),

**Contributor(s)**
Laura Vuillier (UCAM), Evangelia Dimaraki (EA), Tanya Allsopp (PLAYGEN)

**Reviewer(s)**
Francesco D’Andria (ATOS); Stefano Modaferri (IT innovation)

**Dissemination level**
- [ ] internal
- [x] public
- [ ] confidential
### List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EI</td>
<td>Emotional Intelligence</td>
</tr>
<tr>
<td>MMORPG</td>
<td>Massively Multiplayer Online Playing Game</td>
</tr>
<tr>
<td>NPC</td>
<td>Non Player Character</td>
</tr>
<tr>
<td>PLO</td>
<td>Prosocial Learning Objective</td>
</tr>
<tr>
<td>PL</td>
<td>Prosocial Learning</td>
</tr>
<tr>
<td>RPG</td>
<td>Role Playing Game</td>
</tr>
</tbody>
</table>
Executive summary

This report aims to provide a high-level collection of prosocial game scenarios based on core prosociality domains as described in D2.1. It also aims to provide an outline methodology for selecting Prosocial Learning Objective (PLO) scenarios.

This document is intended as an initial outline for designers of prosocial games, as a source of inspiration for potential prosocial scenarios in games as well as a description of methodology to use when conceptualising scenarios. This report provides succinct and prescriptive game scenarios that will serve as the foundations for inspiring game designers to imagine new games incorporating a variety of PLOs. Additional scenarios from existing games are also provided to help further illustrate similar games to look into.

This report is built upon D2.1 report that described the seven core domains of prosociality. Empathy, Trust, Fairness, Compassion, Generosity, Cooperation and Emotional intelligence are explored through discrete generalised scenarios as well as existing games. A generic method for selecting PLO scenarios is provided which may be applied to any of the core domains of prosociality. Finally a game scenario (the Castle Kingdom) containing multiple PLOs is provided as an exemplar of how a single game may incorporate multiple core domains.

This deliverable acts as a direct input into D2.5 and a starting point for D2.6. D2.2 serves and an outline for a generalised methodology for defining such scenarios and focuses on provision of game scenarios for teaching and learning prosocial aspects.
Index

1 Introduction ........................................................................................................................................... 6
1.1 Purpose of the Document .................................................................................................................. 7
1.2 Scope and Audience of the Document .............................................................................................. 7
1.3 Structure of the Document .................................................................................................................. 7
2 Prosocial Game Scenarios for Empathy .............................................................................................. 8
2.1 Generalised Game Scenarios illustrating Empathy .......................................................................... 8
2.2 Empathy Scenarios in existing games ............................................................................................... 9
3 Prosocial Game Scenarios for Trust .................................................................................................... 11
3.1 Generalised Game Scenarios illustrating Trust .............................................................................. 12
3.2 Trust scenarios in existing game ........................................................................................................ 13
4 Prosocial Game Scenarios for Fairness .............................................................................................. 16
4.1 Generalised Game Scenarios illustrating Fairness .......................................................................... 16
5 Prosocial Game Scenarios for Compassion ....................................................................................... 17
5.1 Generalised Game Scenarios illustrating Compassion ................................................................... 17
5.2 Compassion Scenarios in existing games ........................................................................................ 18
6 Prosocial Game Scenarios for Generosity .......................................................................................... 19
6.1 Generalised Game Scenarios illustrating Generosity ..................................................................... 19
6.2 Generosity Scenarios in existing games ........................................................................................... 19
7 Prosocial Game Scenarios for Cooperation ....................................................................................... 22
7.1 Generalised Game Scenarios illustrating Cooperation ................................................................... 22
7.2 Cooperation Scenarios in existing games .......................................................................................... 23
8 Prosocial Game Scenarios for Emotional Intelligence ........................................................................ 26
8.1 Generalised scenarios Generalised Game Scenarios illustrating EI .............................................. 26
8.2 EI Scenarios in existing games .......................................................................................................... 26
9 Methodology for selecting PL Scenarios ............................................................................................ 28
9.1 Selecting the appropriate scenarios.................................................................................................. 30
10 Castle Kingdom - Game Scenario combining multiple PLOs ........................................................... 31
11 Conclusion ......................................................................................................................................... 33
11.1 Conclusion ....................................................................................................................................... 33
11.2 Future Work ..................................................................................................................................... 33
## Table of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Sims Series</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>Façade</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Elder Scrolls of Oblivion</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Space Alert</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>Diplomacy</td>
<td>14</td>
</tr>
<tr>
<td>6</td>
<td>Adventures of Shrelock Holmes</td>
<td>15</td>
</tr>
<tr>
<td>7</td>
<td>Fallout 3</td>
<td>18</td>
</tr>
<tr>
<td>8</td>
<td>Tamagotchi</td>
<td>18</td>
</tr>
<tr>
<td>9</td>
<td>Pokemon</td>
<td>18</td>
</tr>
<tr>
<td>10</td>
<td>Super Mario RPG</td>
<td>19</td>
</tr>
<tr>
<td>11</td>
<td>Age of Empires</td>
<td>20</td>
</tr>
<tr>
<td>12</td>
<td>Clash of Clans</td>
<td>20</td>
</tr>
<tr>
<td>13</td>
<td>Candy Crush</td>
<td>21</td>
</tr>
<tr>
<td>14</td>
<td>Splintercell Blacklist</td>
<td>23</td>
</tr>
<tr>
<td>15</td>
<td>Minecraft</td>
<td>24</td>
</tr>
<tr>
<td>16</td>
<td>World of Warcraft</td>
<td>24</td>
</tr>
<tr>
<td>17</td>
<td>Acme-Bolton Trucking Bolt Game</td>
<td>25</td>
</tr>
<tr>
<td>18</td>
<td>Left 4 Dead</td>
<td>25</td>
</tr>
<tr>
<td>19</td>
<td>Sims 4 Character Moods</td>
<td>27</td>
</tr>
<tr>
<td>20</td>
<td>Sims 4 Traits model</td>
<td>27</td>
</tr>
</tbody>
</table>
1 Introduction

This section provides detailed information about the purpose, scope and structure of the document as well as the intended audience of the document.

1.1 Purpose of the Document

To provide high-level collection of prosocial game scenarios based on core prosociality domains as described in D2.1, as well as providing an outline methodology for selecting Prosocial Learning Objective (PLO) scenarios.

1.2 Scope and Audience of the Document

This document is intended as an initial outline for designers of prosocial games, as a source of inspiration for potential prosocial scenarios in games as well as a description of methodology to use when conceptualising scenarios.

By providing succinct and prescriptive game scenarios the foundations for inspiring game designers to imagine new games incorporating a variety of PLOs are established. Additional scenarios from existing games are also provided to help further illustrate to game designers similar games to look into. It is assumed that the reader of this document is either a game designer or has extensive experience with games mentioned in this document.

1.3 Structure of the Document

Building on the core domains of prosociality in D2.1, seven high level core domains of Empathy, Trust, Fairness, Compassion, Generosity, Cooperation, Emotional intelligence are explored through discrete generalised scenarios as well as existing games. A generic method for selecting PLO scenarios is provided which may be applied to any of the core domains of prosociality. Finally a game scenario containing multiple PLOs is provided as an exemplar of how a single game may incorporate multiple core domains.
Empathy is defined as the ability to understand and share the feelings of others. It can be outlined as deep appreciation for other’s situation (emotional state) and their point of view. Empathy also corresponds to being aware of someone’s emotional state.

Empathy may be a complex concept to grasp with nuanced descriptions. The descriptions of the scenarios below represent the view the empathy as the ability to understand people’s emotions.

Empathy scenarios may be developed to illustrate and provide player experience for:

1. Correctly identify emotions in others
2. Develop the ability to accurately describe cause and effect of emotions.

2.1 Generalised Game Scenarios illustrating Empathy

- Scenarios where the player is asked to guess the emotional state of another player based on previous or future events. A simple scenario may incorporate distinguishing between happy and sad. The complexity of the scenario can grow through offering more nuanced emotional states to identify for example choosing whether a character is depressed or upset.

- Scenarios may involve players planning their interaction with other characters based on the ability to determine the other’s emotional state, such as waiting for a better time to approach an angry character.

- Scenarios can create opportunity for the player to identifying with others problems/feelings (either in familiar situation where the player has prior knowledge of the situation or where the player does not have specific knowledge about the reasons behind the other’s feelings).

- Scenarios where the player needs to internalise and reflect on the emotional reasons and causality about another player’s actions, by trying to imagine being in their shoes, how they may feel in a similar situation.
2.2 Empathy Scenarios in existing games


Sims 4 during the gameplay you are given clues and different emotions indicators when the character experiences a certain emotion and changes of interaction options towards your own character. The empathic component of the game structured around the player being able to make judgements on a character’s mood. Interacting with other sims is a social interaction meta game, where the player must evaluate the sim’s emotional states and their causality.

![Figure 1: The Sims Series](image)

- In a game session the player spots a Sim (Fred) who looks unhappy, noticing the way they walk around the house, their body language and a little rain cloud above their head. The player clicks on Fred and is presented with these options; “ask what’s wrong”, “tell a joke”, “ask to leave” and “offer a tissue”. In this instance the player asks Fred what is wrong to which they reply in their sim language and the social relationship between the player and Fred increases, as well as the Fred now becomes in a better state. However if the player decided to “Ask Fred to leave” or even “Tell a joke” the situation could have gone the wrong way, by asking Fred to leave it most likely would have caused an argument between both of them, or even telling a joke, because Fred doesn’t like jokes he would have taken it as an insult causing friction and most likely decreasing the social relationship between the player and Fred.

- Humour can also be used to help elevate character’s moods and provide an engaging framing for interacting with the players.
Façade [http://www.interactivestory.net/](http://www.interactivestory.net/)

Uses artificial intelligence (AI) and natural language processing to simulate a married couple having a domestic dispute.

You play as the close friend where you can ask questions to Trip and Grace (the characters) to unravel the story. Forms of non-verbal communication such as vocal tones and facial expressions act as major indicators on how well the conversation and player progression is going. You may act or say something that is offensive or may gauge an angry reaction from either characters resulting in you being asked to leave, ending the game.

For instance, in a game session there is a dilemma where the player is faced in a situation where they must either talk to Grace to enquire about her personal well being or to ignore her and ask Trip about his new cocktail kit. To progress and unfold Grace’s story the player would opt to enquire about her feelings, however to unfold Trip’s story the player needs to show interest in him. Both Trip and Grace pull the player towards their conversation and it’s up to the player to make those choices either moral or immoral. The players get caught between the two and can sometimes find themselves making decisions through concern due to how the other character is reacting, trying to get the player’s attention.


The persuasion wheels when in dialogue with an NPC helps the player react to the emotional state of the character and the dialogue. Instead of 4 direct answers as seen in the traditional branching scenarios, multiple choice mechanics such as the persuasion wheel allows the player to react in high and low intensities of a given response. Players are required to empathise with the character and estimate the emotional response from the character. When the player’s mouse hovers over their chosen intensity the characters facial expression changes, indicating if they are going to get a positive or negative response.
3  Prosocial Game Scenarios for Trust

Depending on the aims of the scenario, teaching trust can be seen from different perspectives.

The definitions of trust rely on the concept of close relationship. There are several dimensions of trust, corresponding to rational knowledge about who to trust (police, doctors, authorities), emotional trust (emotional bond and response to close people betraying our trust), and behavioural trust (from experience).

Game scenarios may include situations to support the learning of:

1. **How to trust** (giving trust) with two components:
   a. **Who to trust**, and
   b. **When to trust**.

2. **How to be trustworthy** (receiving trust)

As with prosocial interactions there are at least 2 parties, the giver and the receiver:

- **Trust Giver**: the player decides if the other player or entity is trustworthy. For example, this could be measured on the number of times a player delegates a task to another player
- **Trust Receiver**: the player to be trusted based on their claim or declaration. For example, if the other players are trusting Player A by delegating tasks.

Depending on the social situation, the outcomes of trust as trusting or being trustworthy can also be viewed as those pertaining to the individual’s values and those pertaining to the collective values.

The three components of trust; rational, emotional and behavioural, relate to different situation and processes of trust. i.e.:

- **Rational trust (aka knowledge)**: is based on the processes the individual follows to assess another’s intention and ability to keep promises, by identifying factors in terms of reliability, ability, predictability, credibility and dependability.

- **Emotional trust**: Concerns situations where players must trust their allies and distrust their foes or opponents enemy whom they are trying to defeat, based on intuition, where the lack of trust is not assessed logically but driven through emotions.

- **Behavioural trust**: Occurs based on previous knowledge or of the trustee behaviour. So the player will be choosing whether to trust or not, based on a previous actions of the character or co-player.
The table below provides high-level description of interactions between giver and receiver.

Table 1: high-level description of Trust interactions between giver and receiver

<table>
<thead>
<tr>
<th>Trust Giver</th>
<th>Trust Receiver</th>
<th>Gives Trust</th>
<th>Mistrusts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is Trustworthy / Honest</td>
<td>The receiver is trustworthy and the giver trusts. Positive interaction. The receiver may receive more important tasks as they’ve shown themselves reliable character, and small, not vital task to less reliable player.</td>
<td>The receiver is trustworthy but the giver does not trust them. There may be feedback to receiver to show more trusting behaviour in the future. Outcome /feedback to giver to consider their decisions more carefully as they mistrusted a trustworthy other.</td>
<td></td>
</tr>
<tr>
<td>Is not Trustworthy / Dishonest</td>
<td>The receiver is not trustworthy, but the giver trusts them. Feedback to giver to exercise more caution when trusting others with outcomes that may reward the receiver if they were an opponent.</td>
<td>The receiver is not trustworthy, and the giver mistrusts them. This is the correct outcome for the giver and the giver may be rewarded for their correct identification.</td>
<td></td>
</tr>
</tbody>
</table>

3.1 Generalised Game Scenarios illustrating Trust

- A game that requires players to select other players/characters/entities to trust, for example by trusting critical information regarding in-game resources, actions or abilities that the other player is offering.
- A game that requires one player (A) to trust that another player (B) is giving the right directions in a labyrinth game for instance. Player A would have to trust player B to get the maximum reward. Such type of scenario has been created in the CERTH labyrinth game where a player with strength but no knowledge of the labyrinth (the Muscle) is guided by a second player who cannot walk but knows the secrets of the labyrinth (the guide).
- Scenarios can be expended to provide opportunities for the player to show their reliability or dependability to others while presenting their abilities, knowledge or intent.
- The outcomes can be shown in terms of the individuals’ own outcomes and the collective outcomes. Replay through role reversal and multiple play rounds can be designed to show how over time both individuals’ & collective outcomes can be improved, even though on first appearance, it may appear that dishonesty increases the player’s own outcomes. e.g. tragedy of commons, public goods
A scenario may incorporate a gateway that requires a certain amount of trust to be registered within a group before the game can be advanced. Players may report on their level of trust of others. In this case anonymous aggregate trust may be reported so that no player is singled-out. When a specified level of trust is reached, the level / action is unlocked. i.e. Trust Capital.

A scenario may incorporate trust of a stranger to hold players resources, for example treasure, while the player attempts another action. At first the player may infer knowledge from other entity or system about the character they need to trust by relying on testimony or opinion of another character who has been trusted before. Later, the player may have to decide whether to trust the other player only by looking at facial expression of emotions (more difficult level)

In all these scenarios, a history of trust may be present. A reputation rating system could provide feedback on the trustworthiness of a player, much like ratings on online transaction site ebay. Additionally, and following the Ebay example again, the number of trust action should be mentioned somewhere. For instance, trusting someone with 5 stars (maximum) based on only one event should not be identical to trusting someone with the same 5 stars but accumulated on hundreds of trust events.

3.2 Trust scenarios in existing game


Space Alert is a role-play cooperative team survival game where players jump into the shoes of crew-members of a small spaceship scanning dangerous sectors of a galaxy.

The game only lasts ten minutes (hyperspace jump, sector scan, hyperspace jump back) with the only goal for all players being to protect their ship.

During gameplay, the computer presents a variety of threats, varying from space battleships and interceptors to different interstellar monsters and asteroids.

Players must come together and decide each role for each other to deal with the threats. Player’s must be able to trust each other in order to complete the game within the time limit.

A game scenario may concern an asteroid about to hit the spaceship in 10 seconds, the commander makes the decision to fire the lasers, although the three other players decide to
fire the ion cannons instead due to the commander’s previous untrustworthy commands. The Commander is overruled and the mission is complete, however now the team no longer trust the commander’s knowledge, so a new commander is elected who is more trusted in order for the whole team to be victorious in the short 10 minute game.

- A similar scenario could make use of the Trust Capital mechanic described earlier. i.e. a certain level of trust must have registered for players and NPC to act collectively and destroy the asteroid or overrule the commander.
- A more complex interaction could take into consideration if the level of trust is warranted and adjust the outcome accordingly: i.e. if the trust is not warranted, then trust may be betrayed.


*Diplomacy* is a strategic board game where players control armed forces of Major European powers (Great Britain, France, Austria, Germany, Italy, Russia or Turkey).

Players instruct their united by writing a set of “orders”. The outcome of each turn is determined by the rules of the game. There are no dice rolls or other elements of chance. There is a significant focus on the negotiation. In the negotiation phase, players communicate with each other to discuss strategy, form alliances and share intelligence or may spread disinformation and act with their own agenda in mind. Players must forge alliances with others and closely observe their actions to evaluate their trustworthiness.

Players may at any time betray each other so the gameplay is very tense where players are constantly re-evaluating each other and their army movements.

- In a single game session, the negotiation phase the player playing as Italy had forged an alliance with another player representing Russia to share intelligence on other European powers. Although mutual respect had been gained from the alliance, the player representing Italy still didn’t fully trust Russia due to the last round when Russia invaded its previous ally Germany. Russia knew when Germany was weak from the intelligence they shared and used the alliance as a facade to hide their true intentions. So Italy played it safe by passing intelligence that is only 50% correct.

- Whilst the scenario above as described may not be directly suitable for our target group, the same mechanics may apply in other context. Scenarios that involve **teaming up to accomplish a goal** or **deal with a natural danger** rather than war scenarios may be preferred.

A single player point-and-click adventure games in which the player must learn which characters to listen to and decide who to trust in order to solve puzzles and advance the story.

Figure 6: Adventures of Shrelock Holmes
4 Prosocial Game Scenarios for Fairness

Fairness corresponds to an equal distribution of resources between different parties (such as peers or family members). Fairness could be implemented in two different ways:

1. **Giving fairness:** Players are being required to **exercise fairness**, i.e. the player distributes resources / means / goals equally among other players.

2. **Receiving fairness:** Player being on the receiving end of fairness, i.e. the player experiences fairness, for example through being presented with specific fair or unfair situations in order to illustrate the point.

4.1 Generalised Game Scenarios illustrating Fairness

- Scenarios where there is an unambiguous connection between the player being unfair to the other player and negative outcomes for the player. Providing opportunities with the games for the players to explain and reflect on their thoughts and emotions that result from their experience would enhance the effect, as would guided group discussions. This maybe an integral part of the blended learning approach.

- Scenarios ought to be extended where possible to allow the player to act fairly after being treated unfairly by another player. A bigger reward for the player in this instance ought to be considered.

- Scenarios may use fairness as a progression mechanism, for example fairness being explicitly required to advance in the game.

- Scenarios can be extended so the requirement to be fair is not explicitly discussed or described, rather they are discovered as an emerging outcome of interactions in game that leads to success.
5 Prosocial Game Scenarios for Compassion

Compassion represents concern for the sufferings or misfortunes of others. Compassion is a logical continuation of empathy and the two concepts are strongly linked. Compassion is defined as understanding of the emotional state of others and desire to act on it to reduce the suffering and/or bring comfort to the people who suffer. Compassion scenarios may be developed to illustrate and provide player experience for:

1. **Giving Compassion**
   a. **Practical Compassion**, where the player needs to take care of dependents to save them from loss or suffering.
   b. **Compassion for narrative**, where players may sacrifice themselves to save their allies, protagonists may choose between themselves or another.

2. **Receiving Compassion**, where player is the recipient of compassionate acts.

3. **Self-Compassion**, where the player could extend compassion to themselves in instances of perceived inadequacy, failure, or general suffering. Self-compassion may incorporate:
   a. **Self-kindness**: Being warm towards oneself when encountering pain and personal shortcomings, rather than ignoring them or hurting oneself with self-criticism.
   b. **Common humanity**: Recognising that suffering and personal failure is part of the shared human experience.
   c. **Mindfulness**: Self-compassion requires taking a balanced approach to one’s negative emotions so that feelings are neither suppressed nor exaggerated. Negative thoughts and emotions are observed with openness, so that they are held in mindful awareness.

5.1 Generalised Game Scenarios illustrating Compassion

- Scenarios where the players face the option of being compassionate or not to suffering characters. Acting with compassion may reward the player with rewards whilst acting indifferently or with heartlessness may trigger a denial of resource or ability.

- Scenarios may use deep protagonist backstories that scenario demonstrates prior acts of compassion, or the context for suffering or predicament of those who could receive compassion.

- Scenarios may incorporate a pet system in which the protagonist must care for someone else who may be vulnerable rather than themselves.

- Compassion scenarios may be challenging enough to make a player fail a few times, followed by encouragement post-failure to train self-compassion.

- Scenario may incorporate another player witnessing the player acting with compassion or other prosocial behaviour and thus being rewarded and acknowledged in the community. A variable reward ratio would be advised.
5.2 Compassion Scenarios in existing games

**Fallout 3**: [https://en.wikipedia.org/wiki/Fallout_3](https://en.wikipedia.org/wiki/Fallout_3)

In Fallout 3 players experience compassion in the start of the game, where they begin the game as an infant, largely helpless, and through becoming aware of their own vulnerability and accepting the compassion of others, progress through the game.

![Figure 7: Fallout 3](image)


A virtual pet commonly kept on a keychain device where the player had to feed and care for it. Throughout times of the day the virtual pet would require attention to which the player responded with their actions either to feed or play with it. Failure to provide attention to the pet meant that it became unstable and ultimately ended up dying, meaning the device would need to be discarded.

![Figure 8: Tamagotchi](image)

**Pokémon**

Pokemon monsters need to be kept active, trained up to help fight more powerful enemies and taken to the hospital when they have been hurt. Players progress through the game while building an emotional connection with their monsters; it’s much more of a virtual bonding process as you and the monster go on an epic quest together.

![Figure 9: Pokemon](image)
6 Prosocial Game Scenarios for Generosity

Generosity refers to the virtue of giving good things to others freely and abundantly, and involves both attitude and action. Generosity always intends to enhance the true wellbeing of those to whom it is given. Generosity should not be confused with the desire to complete particular actions (for example to retrieve an item for a player) in order to advance in the game. The concept of generosity is closely related to fairness and must be implemented in similar situations to fairness. i.e.

1. **Generosity giver**, i.e. being the player that performs the act of generosity toward another player.
2. **Generosity receiver**, i.e. being the player that is the recipient of generosity.

6.1 Generalised Game Scenarios illustrating Generosity

- Scenarios where the player is given opportunities for being generous, where there is no specific requirement on the player to be generous. Acting meanly or stingily may mean in the short term the player gains more but ultimately may trigger a denial of resource or ability.
- Scenarios may use of deep protagonist backstories that scenario demonstrates prior acts of generosity, or the context of player having abundance where others have little or none.
- Generosity scenario may incorporate another player witnessing the player acting generously by others and thus being rewarded and acknowledged in the community. A variable reward ratio would be advised.

6.2 Generosity Scenarios in existing games


Rise of Sinistrals is good demonstration of generosity towards the player. Upon completion of the main quest in the city of Alunze, the king will offer a player a selection of rewards. To achieve the highest end profit, one must select the "nothing" option, choosing altruism over a set gold reward.

**Super Mario RPG**: [https://en.wikipedia.org/?title=Super_Mario_RPG](https://en.wikipedia.org/?title=Super_Mario_RPG)

**Legend of the Seven Stars**. In this game the player has an option to buy a useless item - fireworks as a very high price. The person selling them claims that they are selling these prototypes to keep researching and working toward the final copy.

The first set can be traded in for another item, but after that, they lose all value, taking limited space in player’s inventory. If the protagonist continues to give to the firework maker to support his craft, they are rewarded with the fancier and fancier fireworks displays at the end of the game.

*Figure 10: Super Mario RPG*
While in multiplayer mode, players within a
team can donate resources to each other to
help with resource management. This can
help in settlement building and unit
production when employing
offensive/defensive strategies.

Players can also open up the diplomacy
window and gift resources to enemy players
to begin building neutral or friendly
relationships, this act may appear more
strategically perceived by other players
rather than an act of generosity, depending on the context.

Players come together in groups
referred to as “Clans”. In order to create
a clan the player must first build a Clan
Castle that houses troops and that can
be used as reinforcements during an
attack or as defenders when a player’s
base is under siege.

Each Clan member can choose to donate
troops to help other members out, for
instance when a members base is under
attack and looks like they are on the
verge of being overrun of eliminated
then all clan members can come
together to donate troops to help the
unfortunate player out.

This game provides scenarios in which the system appears as being generous towards the player, for
example the player is provided with boosters and resources by the system when they enter the game
or return.

Alternatively NPCs occasionally appear who seem to need the generosity of the player, upon which
through player’s decision the player is immediately rewarded or punished.

---

1 Bruce Shelley (April 9, 2007). "Play Age of Empires – Study History in College". Ensemble Studios.
The punishment is not receiving the bonus. So in any case the player is still rewarded all be it not attaining a better reward.

By tapping into natural tendencies of people to react positively to acts of generosity (even from the system when it provides resources to the player or takes them away through presenting NPCs that seem the need the players resources) has undoubtedly played a part in the game’s acclaimed success.

*Figure 13: Candy Crush*
7 Prosocial Game Scenarios for Cooperation

Cooperation is a competent social behaviour that causes many positive consequences.

Social interdependence exists when the accomplishment of each individual’s goals is affected by the actions of others. According to simple models of social interaction there are two types of social interdependence, positive (cooperation) and negative (competition). However, the nature of interference between means (i.e. Resources, abilities, information, skills,...) and outcomes (i.e. Rewards, recognition, overall goal) gives rise a far more nuanced approach to cooperation and competition. Table below defines potential social interdependence scenarios.

Table 2: The different types of cooperation.

<table>
<thead>
<tr>
<th>Means (Resources) Interdependence</th>
<th>Outcome Interdependence (Rewards)</th>
<th>Positive</th>
<th>Neutral (No interdependence)</th>
<th>Negative (zero-sum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>Coordinated interaction toward mutual rewards. ‘we work together sharing resources, skills, we win/lose together’.</td>
<td>Coordinated interaction toward independent outcomes. ‘we work together sharing means, our outcomes are independent’ Personal Development Cooperation</td>
<td>Coordinated interaction toward contrariant outcomes. ‘we need each other but compete on outcomes’ Contrariant cooperation (scarce rewards)</td>
<td></td>
</tr>
<tr>
<td>Neutral (no interdependence)</td>
<td>Means independent interaction. ‘we work independently, we win/lose together. Shared outcomes Cooperation</td>
<td>Entirely individualistic. ‘I work independently, I succeed independently’ Individualistic</td>
<td>Means independent for competitive outcomes. ‘we work independently, compete on outcomes. Competition</td>
<td></td>
</tr>
<tr>
<td>Negative (zero-sum)</td>
<td>Oppositional interaction toward mutual outcome. ‘we compete on means, we win/lose together.’ Shared outcome, means competition</td>
<td>Oppositional interaction toward independent outcomes. ‘we compete on means but succeed individually’</td>
<td>Oppositional interaction toward contrariant outcomes. ‘we compete on means and outcomes’ Hyper-competition</td>
<td></td>
</tr>
</tbody>
</table>

7.1 Generalised Game Scenarios illustrating Cooperation
In general, scenarios that provide opportunity for; profound cooperation, shared outcome cooperation, and personal development competition are preferred over other types of competition and cooperation, as these rely and provide situation for prosocial behaviour.

Scenarios incorporating profound Cooperation with positive means & outcomes interdependence, members of a group share common goals, members perceive that working together is individually and collectively beneficial, and success depends on the participation of all members.

In competitive terms; Personal Development Competition (PDC) is always preferred over Hyper-Competition. Where as PDC provides non-zero sum competition where players do not impede others directing.

Focus on using prosocial means and developing one’s own skills.

Whereas Hyper-competitive, gives rise to potentially negative interactions where the desire to achieve in a zero-sum scenario may results in negatively interacting with other participants.

In negative competition with negative interdependence, members of a group who perform better are rewarded over other individuals in the team, even in losing situations. The goals players have are oppositional, rather than shared with other members of the group. Usually the process is a one-way dependence on resources.

Cooperation whilst competing with other teams, where member of a group work towards achieving a shared goal and in order to do it they need to compete with another team using common knowledge and means can also be positive for teams, but zero-sum outcomes must be avoided.

7.2 Cooperation Scenarios in existing games

Splintercell Blacklist: [https://en.wikipedia.org/wiki/Tom_Clancy%27s_Splinter_Cell:_Blacklist](https://en.wikipedia.org/wiki/Tom_Clancy%27s_Splinter_Cell:_Blacklist)

The cooperative scenarios of this game are only possible through high levels of communication between players using voice as well as through game actions.

Two players allied together take on missions that include; survival maps against waves of enemies, stealth missions in which you must not be caught, mini campaign missions that cover all skills, and dynamic kill-everything maps.

The best vantage points are often only discoverable if players work together, and with the enemies prone to taking a player out, being close is important to help revive their partner.

The issue comes when players are impatient. Three of the four modes reward stealthy gameplay, so lack of cooperation only increases the difficulty, or results in a failed mission.
Minecraft: [https://en.wikipedia.org/wiki/Minecraft](https://en.wikipedia.org/wiki/Minecraft)

Minecraft is a unique open world sandbox game where the only goal is to survive. Players need to fight off hunger and the night time monsters in order to live each day. Working together players can build structures, mine resources and defend their settlement much easier than on their own.

To succeed players need to learn to split up the workload and take responsibility for certain elements of the group’s survival plan. Minecraft’s core game-play lends itself to a purely social game where playing together is far more enjoyable than braving the world on your own.

![Minecraft](image)

Figure 15: Minecraft


World of Warcraft provides competition with positive interdependence on means and outcomes. Players come together in the online world to share journeys and explore the story together.

World of Warcraft (WOW) is famous for “raids” where mass groups of players come together to take on super strong enemies in dungeons. Some raids are meticulously planned by players in online forums and voice over chat systems.

![World of Warcraft](image)

Figure 16: World of Warcraft

Acme-Bolton Trucking Bolt Game

An example of negative cooperation game was developed by Deutsch and Krauss (1960)² to explore the bargaining behaviour of individuals in a social situation.

---

Each player owns a trucking company and tries to make a shipment as quickly as possible.

Each has a long route to the destination as well as a short route that converges into a one-lane road. In order to use the short-cut (and make "money") the players have to cooperate and take turns using the road.

However, each person also has control of a gate to prevent the other trucking company from using the road. The best strategy is to cooperate, and yet the researchers found that when the players had a weapon (the gate), the majority of the time was spent competing and threatening the other. We do not want such scenarios to be developed in our prosocial API.

**Left 4 Dead**: [https://en.wikipedia.org/wiki/Left_4_Dead](https://en.wikipedia.org/wiki/Left_4_Dead)

Left for Dead is a profound cooperative game for up to 4 players, with positive means and outcomes interdependence. While players are forced to work together to get out of situations like being sucked up by a smoker or pinned by a hunter; players will find themselves working together naturally calling out exits, hordes of zombies, and survival strategies. Keeping your teammates healed if need be is vital, there is no room for selfish acts in Left 4 Dead. And if they do die, there's a chance to rescue them later in the level as you'll find them trapped in a closet. There's no other way to put it, if you want to survive one of Left 4 Dead's four scenarios, teamwork is everything.
8 Prosocial Game Scenarios for Emotional Intelligence

Emotional Intelligence (EI) corresponds to the ability to identify, assess, and control the emotions of oneself, others and of groups in order to guide their thinking and actions.

EI can be viewed as an over-arching concept that incorporates emotional aspects of an individual and their interaction with others. Thus, EI is not a core domain of prosociality, rather a superset which incorporates prosocial elements. Emotional Intelligence definition suggests the inclusion of 4 subsequent psychological processes:

1. An awareness of one's own and others' emotions and an ability to monitor emotions and express them appropriately.

2. An ability to use emotions to facilitate thought and to guide selective attention.

3. An ability to understand emotions.

4. An ability to regulate emotions.

Table 3: The 4 facets of emotional intelligence

<table>
<thead>
<tr>
<th>Self</th>
<th>Social (Other)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognition</td>
<td>Social-Awareness</td>
</tr>
<tr>
<td>Self-awareness</td>
<td>Empathy</td>
</tr>
<tr>
<td>Emotional awareness</td>
<td>Accurate assessment</td>
</tr>
<tr>
<td>Accurate self-assessment</td>
<td>Accurate assessment of others’ emotions</td>
</tr>
<tr>
<td>Appropriate Expression</td>
<td>Appropriate identification of others’ emotional needs</td>
</tr>
<tr>
<td>Regulation</td>
<td>Social Skills</td>
</tr>
<tr>
<td>Self-Management</td>
<td>Collaboration</td>
</tr>
<tr>
<td>Self-compassion</td>
<td>Compassion</td>
</tr>
<tr>
<td>Transparency</td>
<td>Generosity</td>
</tr>
<tr>
<td>Achievement Drive</td>
<td>Trust</td>
</tr>
</tbody>
</table>

8.1 Generalised scenarios Generalised Game Scenarios illustrating EI

- EI scenarios need to incorporate emotion challenges, social dilemmas, conflict resolution and cheering up emotionally distraught characters or others.

- Using role-play or NPCs with emotional backstory to encourage authentic emotional response.

8.2 EI Scenarios in existing games


A highly advanced implementing EI in today’s games is the Sim’s series, particularly Sims 4. They explore several scenarios illustrating EI, from recognition to regulation of the NPCs needs by the player.
Sims 4 provides timely backstories and dilemma’s around particular decisions which have emotional dimensions for the player’s Sims, as as the story of the game unfolds. Player’s Sims mood and personality effect what occurs in the game and what choices are presented to them. For example a Sim working as a secret agent who receives the news that there are budget cuts and witnesses colleagues leaving, may have a choice to ‘slack off’ like everyone else or to ‘catch the bad guy’.

If the Sim is hot-headed and ambitious, they can go after the bad guy, and they’d succeed and be given a reward or promotion but given that everyone else had left, they would be embarrassed for the rest of the day that they did not support their comrades.

The player can create sims with different personalities or traits. Traits system allows you to pick three Traits for your Sim. This list of Traits is meant to help decide what would be right for any particular Sim. The Traits the player chooses will determines their impulses or the ‘Whim’ the Sim gets. If you choose ‘Family Oriented’, they Sim will get more Whims for interacting with character’s Family.

With Mean or Evil, the Sim’s Whims lead them to behave rudely toward other Sims. Sims with Ambitious may get Whims for getting Promoted and so attempt to really apply themselves. A Sim will also get Whims based on what they’ve done recently - so if you go to level a certain Skill, you’ll start getting Whims for that Skill. Being affected by certain Emotions also plays a role - if a Sim is tense, they may get a Whim to vent to another.
9 Methodology for selecting PL Scenarios

A game scenario consists of a variety of components and elements depending on the game genre. Every scenario includes and operates on one or many prosocial spaces (i.e. spaces where prosocial core domains can be measured and objective can be defined).

In this section we outline a generalised methodology for defining such scenarios focussing on the impact of game mechanics on prosocial aspects. This methodology will be refined and better detailed in D2.6 Prosocial Game Patterns, which will provide a prescriptive handbook for game developers on constructing PL Scenarios.

All prosocial core domains are enabled by the interaction of at least two actors: a giver and a receiver (possibly both human or one human and one NPC).

So the moment in time in which it is possible to assess prosociality is when what we call a prosocial transition in prosocial space occurs. The model of prosociality advocated in D2.1 and D2.3 states that prosocial transitions are defined in spaces based on the prosocial core domains and are influenced by many factors among which we currently support: game transactions (actions, events and relationships related to the game logic), emotions and characteristics of the player’s psychological profile.

Assessing prosociality means identifying the location within a prosocial space in which a player is situated as a result of one or more game transactions and emotional responses (e.g. a very simple case could be: I have shared 50% of my resources and I am happy). At any given time this location may be identified as part of a spatial zone specific to a PLO achievement; this zone may have ‘fuzzy’ boundaries, so potentially including a variation of game transactions and emotions (e.g: I share 75% of my resources and I am still happy). A prosocial learning objective (PLO) is therefore identified in a space of multiple dimensions that include transaction results measuring game transaction outcomes, emotions and psychological aspects of the player (from his or her profile).

Because emotions are not directly controlled in the game but are observed externally, the rest of this paragraph focuses on describing game transactions that may be a factor in describing a state or a transition in a particular prosocial space.

The game-related elements of PL scenario is composed of the following elements:

- **World**: The game world must provide the ability for players to interact with others. This could ideally be other players; however interactions can also be with NPCs and other non-player game entities, provided that the interaction is linked to the achievement of a PLO.
- **Story**: Where appropriate the context or backstory to illustrate the PLO must be carefully constructed, i.e. a compassion backstory may highlight that despite struggling themselves a character or another player has helped others in need.
- **Resources**: The game must provide one or more resources or abilities that can be affected by PL factors, for example resource health or energy being affected by trustworthiness.
- **Rewards**: Can be categorised into two types:
System -> player, based on a set of system rules, including resources or PL factors.
Player<-> player, such as social recognition, gratitude, liking, expressing emotions towards the other player’s actions, etc.

Rewards ought to follow a variable ratio, so rewards are not always guaranteed to promote automatic prosocial behaviour.

**Social graph:** Specifying player-player & player-team relationships as well as type of relationship for example; **partner, opponent, neutral.**

**Player Prosocial Profile (PPP)** if it exists or history of player PLO achievements within the game (i.e. in-game PPP)

**PL Transaction:** A composite interaction that takes into account giver(s), receiver(s), social graph, rewards and responses.

**PL Giver(s):** i.e. player(s) trusting, being compassionate, being fair, being empathic, etc.

**PL Receiver(s):** i.e. player(s) being trustworthy, receiving compassion.

**PL Social Graph Context:** i.e. PL Giver and PL Receiver relationship is: partners (team-mates), independent, opponents, mentors etc.

**PL Resource:** derived or related to specific in-game commodities such as energy, health, magic or could be abilities, information etc.

**PL Transaction Result** (Giver->Receiver): Positive or Negative transaction i.e. showing trust or betrayal. Sharing energy or stealing energy.

**PL Transaction Response:** Effect of PL Transaction Result on Giver(s) and on Receiver(s). Responses maybe immediate, delayed, public or private.

**Table 4: Outcomes of a PL transaction based on the social graph dependencies and PL transaction**

<table>
<thead>
<tr>
<th>Social Graph dependent</th>
<th>Giver Positive Transaction Result (i.e. shows compassion)</th>
<th>Giver Negative Transaction Result (i.e. shows indifference)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiver Positive Transaction Result (i.e shows gratitude)</td>
<td>Positive rewards / reinforcement for both, highlight interaction publically.</td>
<td>Positive reward for receiver, highlight of receiver’s response to giver.</td>
</tr>
<tr>
<td>Receiver Negative Transaction Result (i.e. shows hostility)</td>
<td>Positive reward for giver, highlight giver’s transaction publically.</td>
<td>Negative reinforcement</td>
</tr>
</tbody>
</table>

- A transaction may have an immediate response from the receiver.
• Interactions have Social Graph context, depending on which rewards may need to be adjusted, i.e. two opponents may not trust each other which may be the correct action.

9.1 Selecting the appropriate scenarios

Formalising the PL space is out of the scope of this document. From the game developer point of view, it is enough to know that the platform will provide an interface enumerating all supported PL spaces (conveniently described) and will be a task for the game developer to link its game transactions to the right one(s) he/she intends to support. Through this action the game will therefore declare what PL spaces are available inside it.

A link between game transaction and prosocial state/transition is established through the prosocial models supported by the platform, so when a game transaction happens the platform can assess the prosocial state of a player. Being in a particular prosocial state can be (part of) PLOs. PLO can be defined by the game itself or by the teacher when using the game with her students.

Learning pedagogies: the experiential learning outcomes offered by game based learning approach can be enhances by incorporating social constructivist approach through rewarding PL interactions within the social game world. However, in order to make it possible for players to make the leap from game to the real world, it’s important to incorporate Reflective Learning elements within the game or blended learning approach.
10 Castle Kingdom - Game Scenario combining multiple PLOs

In this example we highlight how a single game may incorporate multiple PL core domains.

A multiplayer strategy game where each player’s main goal is to build their own castle town and learn to work together with other players to defend against the dark hordes of the underworld.

Each castle town requires a set amount of resources in order to be built, however players begin the game with very limited resources and must learn to cooperate and trade with each other in order to progress forward.

To keep the game simple there are only four types of resource; wood, stone, food and grain. Each player will have a unique advantage, i.e. one player will be able to provide stone, as opposed to another who can provide wood.

The game may incorporate the following PL core domains:

The prosocial aims of castle kingdom are first and foremost to help players work together, while promoting generous behaviour and providing opportunity for players to show empathy, trust, fairness and compassion.

- **Cooperation**: Players need to cooperate with each other to acquire the resources needed to build their castle town. Cooperation can be in the form of trading with each other or even working together (forming alliances) to reach a common goal.
- **Generosity**: Apart from trading, players can help each other out by donating resources to others. This is a one-way trade action; however there is no system in place to stop the other player from reciprocating by donating back. The game may also “donate” resources to players to help them realise donating is a positive action, it feels good to receive something so why not donate to another player to share the emotional experience.
- **Trust**: Players need to build up trust between each other, such as agreeing upon trade prices, working together and when the time comes to trust each other in defending the kingdom from the dark hordes.
- **Empathy**: When another player’s castle town has been destroyed the player may be asked to describe how the other player may be feeling. Additionally, the player whose castle is destroyed may become aware of the other player’s empathy towards their predicament.
- **Compassion**: Players may be presented with opportunity to show compassion, for instance toward another team or player who has lost their castle. Their act of compassion may increase their resources, especially if they are not a partner of the other player or if they are an opponent and thus being compassionate may reduce the chances of the player winning.
- **Fairness**: The game may provide opportunities for players to act with fairness, for instance in dividing a resource which only they have and others may need in order to play the game. They may be asked explicitly to divide up the resource for instance.

In terms of game design patterns, the game also relies on:
• **Asymmetric Resource Distribution** - The resources are distributed asymmetrically among the players, that is, the players have different access and ownership rights to different kinds of resources during the game.

• **Dynamic Alliances** - The alliances are dynamic in nature, that is, new alliances can be created, old alliances can die out and the characteristics, especially the player composition, of an alliance can change during the game play.

• **Trade & Negotiation** - A situation where the players confer with each other in order to reach an agreement or settlement.

These types of patterns will be extended further in D2.6.
11 Conclusion

11.1 Conclusion

This report demonstrated with clear game examples how to implement PLOs in games scenarios. Each PLOs (Empathy, Trust, Fairness, Compassion, Generosity, Cooperation and Emotional Intelligence), has been described in terms of games scenarios with various examples. Finally, a Game scenario combining multiple PLOs has been developed.

This report described the initial outline for designers of prosocial games, as a source of inspiration for potential prosocial scenarios in games as well as a description of methodology to use when conceptualising scenarios.

11.2 Future Work

This deliverable will act as direct input into D2.5, Evaluation Strategies and Protocols, and a starting point for D2.6 the Prosocial Game Design Methodology.