

# GAMIFICATION OF SMART METER HOME DISPLAY UNITS USING TARGETED REWARD MECHANICS.

## Gamification of Smart Meter Home Display Units Using Targeted Reward Mechanics.

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## **Abstract**

This research is part of a TSB funded feasibility study (ARIA) and is the preliminary reward based design concept for a game to accompany electricity Smart Meters' Home Display Units. The purpose is to engage players in the game for an extended period so they would similarly engage in using their Home Display Units in order to lower their electricity consumption and modify their behaviour. This paper looks at reward within computer games and establishes a visual framework for displaying the reward mechanics used in games in the form of "Three Corners of Reward". It establishes the link between personal reward, material reward and competitive reward through three drivers, intrinsic, extrinsic and social play which is then linked to player demographics. In this case the target market requires a spread of male and female, but majority female with a broad appeal to many age groups.

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## **Gamification Of Smart Meter Home Display Units Using Targeted Reward Mechanics.**

It should be an accepted fact that players play video games for a specific stimulus, to have a positive feeling; however this fact, however true, is rarely looked upon. In a study looking at dopamine release during a video game (M.J. Koepp et al 1998) the research showed that when players are playing a game, or in this case, navigating a tank, the process of learning the mechanics of the game made the subjects brain reward them.

With the above in mind, the Three Corners of Reward main purpose is twofold, firstly to simplify what designers see as rewards in a game to, secondly, better appeal to their respective audiences. This means that the rewards in games can be categorised into three main areas, Personal, Material and Competitive.

Personal reward is the players own ideals and goals that they put on a game. For example, players may just want to complete the game while others may wish to complete it 100%. These goals are, as the name suggests, personal to the player, therefore it is not easy to study as every person has different values. However, certain core values run through every player such as wanting to complete the game, this can be assumed when a player is playing a game.

Material reward is simply being given a reward for actions, for example, winning a stuffed bear at a fairground for knocking over a pile of cans, the player is offered a reward for doing well which is an outside influence on the game.

Competitive reward is the feeling player get after besting other players. This could be in the form of more points, a quicker time, beating other players in battle or even just having a higher completion score. The desire to be the best pushes the players to keep playing and

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mastering the game just for bragging rights. This type of reward also, obviously, looks at the players interactions with other players.

These three main types of reward can then be combined together explain other areas of reward that are differing parts of each section, Personal Material reward (Own Goals), which is the feeling of accomplishing something that the player has set for themselves to do in the game, Materialistic Personal reward (In game achievement), in where the player receives something for completed or attempting certain actions in gameplay or actions relating to the game. These types of reward are intrinsic rewards, a type of motivation which comes from enjoying the activity or having a large interest in it with little or no external influence. The enjoyment comes from a personal aspect and the game becomes more meaningful to the player (Singh, et al., 2005).

Material competitive reward (Material Gain), where the player receives items for taking part in a competitive situation relating to the game they are playing, this could be anything from an in game item or a special un-lockable in game to show a competitive participation relating to the game

Competitive material reward (Competitive achievement) where the player plays the game for a competitive aspect and/or some sort of competitive award such as becoming a “pro” gamer or becoming a famous player, the main focus here is on being the best player(s) of the game in question rather than receiving anything for playing in a competitive stance. These areas relate to “social play” (Bekoff, et al., 1997), games that offer these potential services that allow players to connect and play with other players in a multiplayer environment not only makes the games competitive community increase but the overall time spent playing the game in general (Quiltch & Risley, 1973).

Competitive personal reward (Leaderboards), this is less of a multiplayer element and more of a personal affirmation by being the top of a game usually represented by a

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leaderboard or a score table. This is usually seen in some fighting games or games with very little multiplayer aspects but still have elements and content that can be compared against other players.

Personal competition reward (Beating friends), this is the feeling the player receives when beating another player's score but focusing more on besting other players known to the player such as friends or peers for their own satisfaction. These are types of extrinsic reward (Ryan & Deci, 2000), a motivation to win in order to receive an outcome not always meant to be enjoyable but to get something that can be seen by others outside of the game.

Combining all of these variations of reward a new triangle was created in order to best show and explain these three areas of reward in a clear and simplistic fashion.

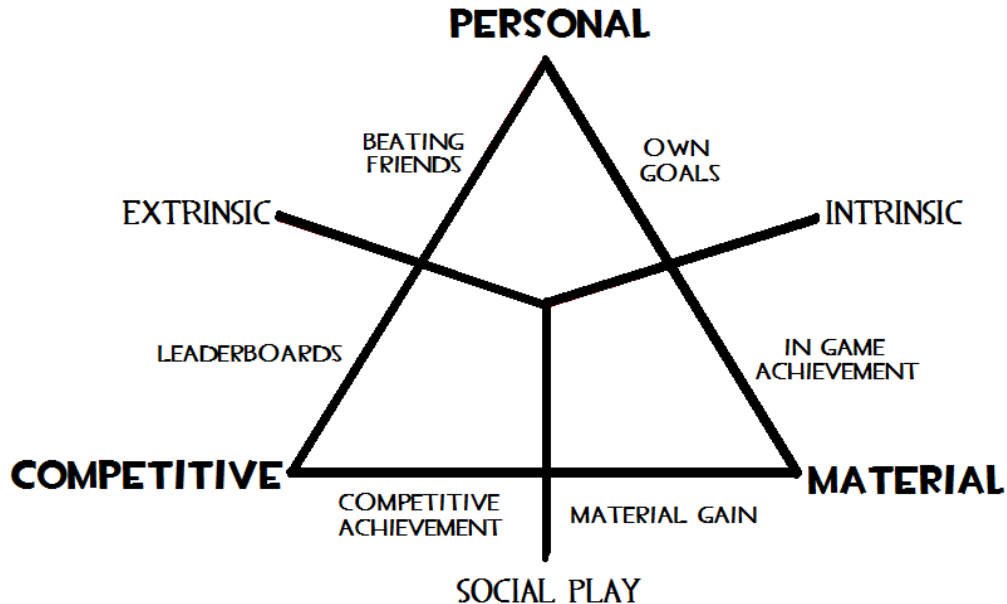


Figure 1. The 3 Corners of Reward diagram

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## Demographics and Reward

In a study in 2011, primarily into knowing your social gaming customer in order to monetise your games, Nick Berry President of DataGenetics devised a unique way of showing the demographic of a game based on instantly recognizable curves Males on the left Females on the right, 13 years old on the top moving down by age to 65 and over at the bottom (N. Berry 2012).

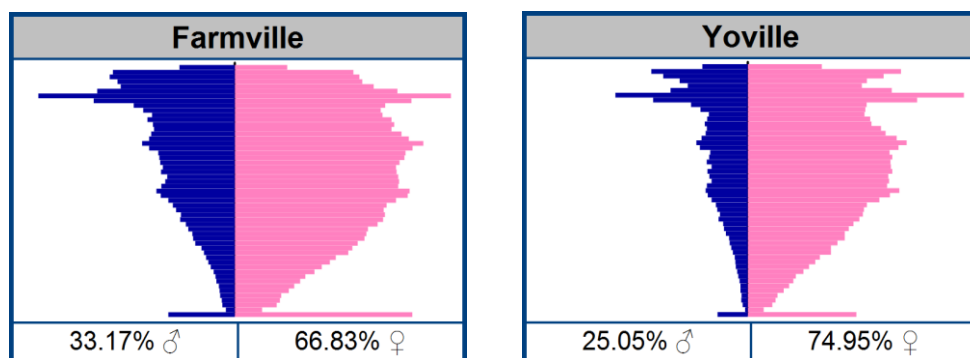


Figure 2. Social Gaming Demographics

This type of diagram serves a framework in which to analyse the demographic, based on the shape of the curves formed. This contrasts more hardcore gaming and Gambling shows a very different demographic and a differently shaped curve.

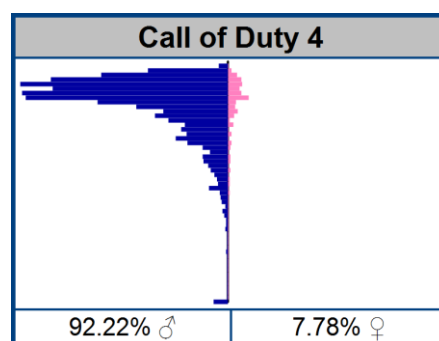


Figure 3. Hardcore Gaming Demographics

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By using three corners of reward and demographic information we can see a link between certain demographics and types of reward therefore enabling us to develop a framework of reward for games base on the demographic of the target audience.

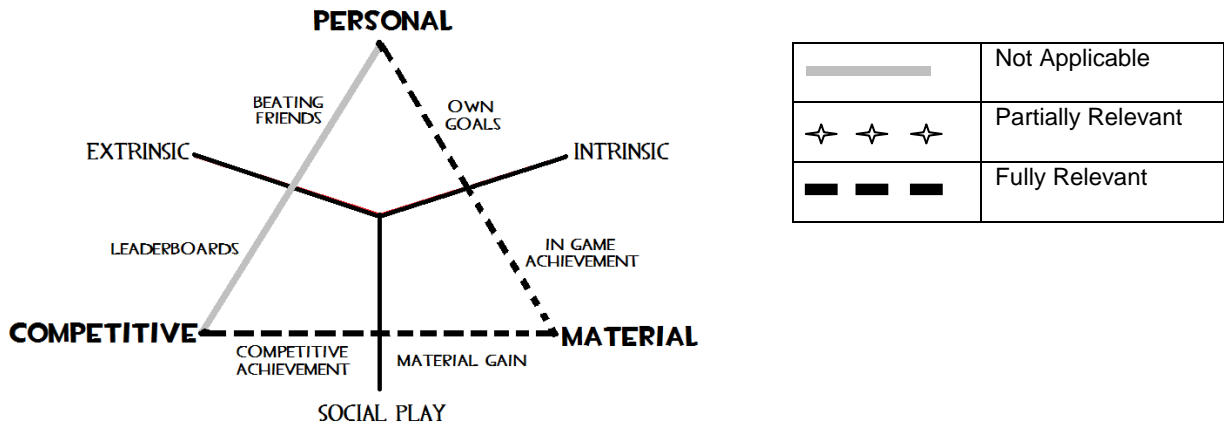


Figure 4. Social Gaming Triangle

This shows us that games termed as “Social Gaming” produce reward that demonstrates both “Intrinsic” and “Social Play” reward mechanics and suits the demographic we seek. Whereas Call of Duty whose demographic was male and young has a totally different triangle it fills the bottom side of the triangle which focuses on social play rewards and also leads into competitive personal rewards being more apparent than any other side. Reward here is more extrinsic.

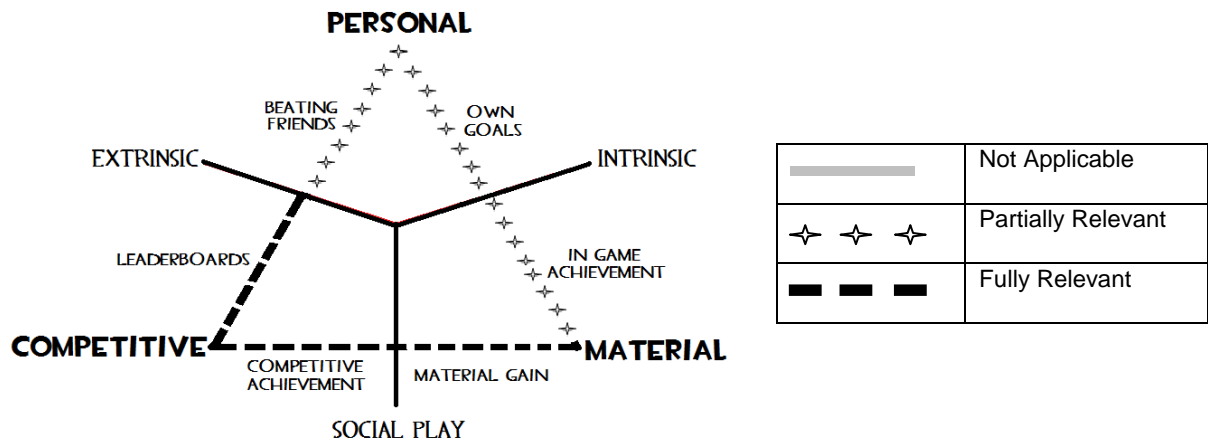


Figure 5. Call of Duty Triangle

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## Reward Design for ARIA

From this research we can create an outline design of the rewards to be used in the ARIA project. ARIA will be a Social Games as it fits the demographic we are looking for, using the following reward mechanisms. “Own Goals” reward will be a reduction in the cost of household bills and knowing you’re the best and most green consumer. “In Game Achievements” will be achieved by goals set by the player under specific categories and getting in-game trophies for their in game trophy cabinet. “Material Gain” will be achieved by keeping to the baseline energy consumption to gain points to be published on Facebook. The player will receive real-world vouchers based on the own goals they have selected and the “Competitive Achievement” will be gained by having High Scores to share on Facebook.

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