

Game Based Solution Design

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The aim of this article is to present an umbrella term for the use of games and game-like solutions in non-game contexts. Many people lump this all under Gamification. I have chosen the term Game Thinking instead and hopefully, by the end of this, you will understand why and also have a better understanding of the differences between games, gamification, serious games and more.

Ever since I first started considering Game Thinking, I have been trying to come up with a way to break down all of the parts that make it up. The first attempt was my article about the [differences between serious games and gamification](#). This gave me a basic outline of the 4 areas I considered to make up Game Thinking.

I define game thinking in the following way;

The use of games and game-like approaches to solve problems and create better experiences.

Since then, I have been thinking about this a lot. I have been trying to break it down even further. The next step was my article on the term [serious games](#). This broke serious games up into 4 basic types. Teaching Games, Meaningful games and Purposeful games. This led to me writing down a basic outline of what would fall under the other headings in my list. After good conversations on Google+ ([here](#) and [here](#)), I finally came up with an outline of what actually comes under Game Thinking.

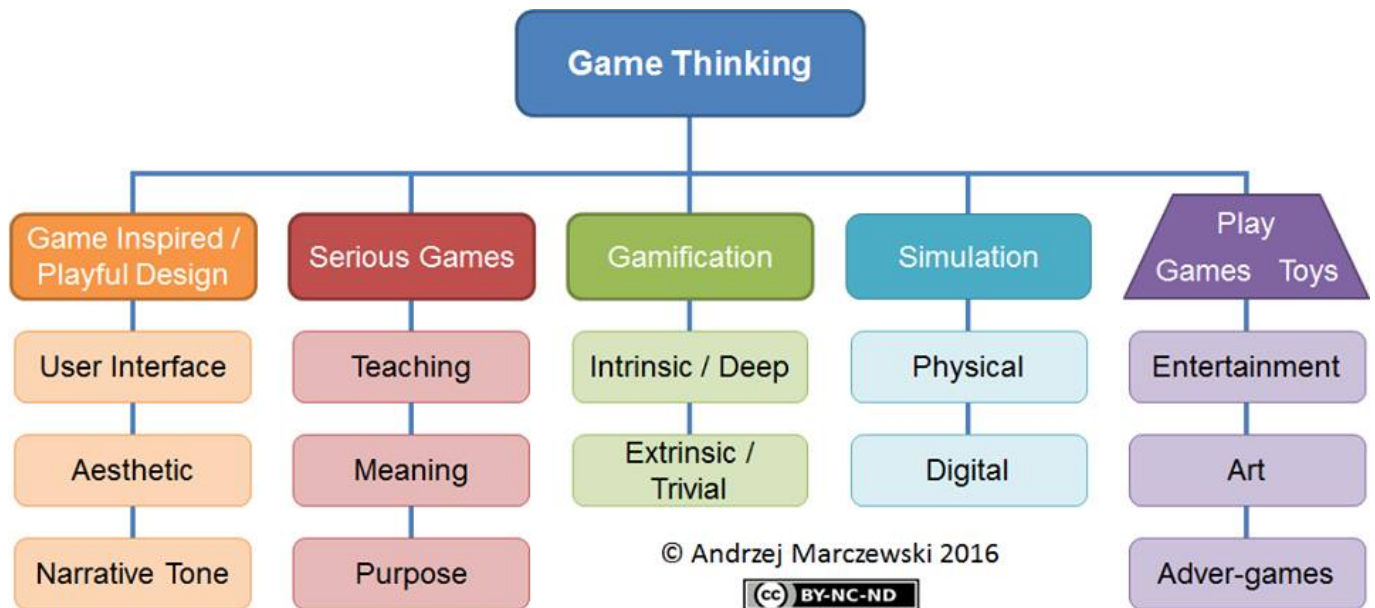
For the sake of clarity, a fifth category can be added for the purpose of game-based

solutions, simulations, that of simulations.

Game & Game-Like Experiences Split by Design Intent

	Game Thinking	Game Elements	Virtual World	Game Play	Non Purposeful
Game Inspired Design	●				
Gamification	●	●			
Simulation	●	●	●		
Serious Game	●	●	●	●	
Game	●	●	●	●	●

Differences between games etc



Game Thinking 2016 Update

Game Inspired Design / Playful Design

I used to call this gameful design, but this now has more [gamification](#) like connotations. This is where no actual elements from games are used, just ideas. So user interfaces that mimic those from games, design or artwork that is inspired by games or the way things are written. All of these have links to games but do not contain anything that you would consider to be part of a game ([mechanics](#), dynamics, tokens etc.)

Gamification

Gamification is generally defined along the lines of “*The use of game thinking and elements in non-game contexts*”. Here I have split gamification into two distinct types. Intrinsic and Extrinsic. This is very similar to Karl Kapps [two types of gamification](#), where he talks about structural and content gamification.

Extrinsic gamification is the sort that most people are used to, where game elements are added to a system. Things like points, badges, progress bars etc.

Intrinsic gamification is more about using [motivation \(RAMP\)](#) and behavioural design to engage users.

Serious Games

Spoken about here already, this group includes full games that have been created for reasons other than pure entertainment.

Teaching Game / Games for Learning

This is a game where you are taught how to do something, by playing a real game. An example of this is [Phantomation](#). This was a game that was designed to teach you how to use the animation software Play Sketch. Rather than just showing you the tools, it has you solving various puzzles that need deeper and deeper understanding of the tool. The big thing with this game was that it could be enjoyed as a game in its own right, even if you didn't have an interest in learning the tool!



Meaningful Game / Games for Good

This is a game that tries to get across a meaningful message and if possible promote change with that message. An example of this would be [Darfur is Dying](#). This was the result of a competition run by the Reebok Human Rights Foundation and the International Crisis Group. Five students from the University of Southern California created the winning game, that placed you in the shoes of a displaced Darfurian refugee. It aimed to show the hardships faced by the millions of people who had been displaced by the crisis in Sudan. Rather than trying to teach you a tool or a method of doing something, this type of game is

trying to inform you about things that may never have crossed your mind in a way that is engaging and meaningful.



Purposeful Game

The idea of a purposeful game is that playing it has some sort of real world outcome. Four examples of this come to mind. [FoldIt](#), [Tilt World](#), [Genes in Space](#) and [Digitakoot](#). FoldIt is a popular game that is often cited by gamification folk. It is a puzzle game that sets the player the task of predicting the structure of proteins by folding it. Understanding how proteins fold can help lead to the development cures all sorts of sorts of diseases, including HIV and even Cancer. Humans are really good at solving puzzles, so much so that in just ten days, gamers had solved one enzymatic structure that scientists had been trying to unravel for more than a decade. Tilt World, by Nicole Lazzaro, is a mobile game that puts you in the body of the last tadpole - Flip. You must eat carbon from the air in an attempt to restore the sunshine to flips home. Whilst this may seem like a meaningful game, in that it is trying to promote a message about ecology, the unique thing about Tilt World is that playing it leads to trees being planted in Madagascar. Genes in space is a fun space shooter game that also has you mapping genomes to help the fight against cancer in the real world! My final example is Digitalkoot. Here the player had to type words as they appear, building a bridge for a mole to walk along. Each word is actually scanned in from newspapers, books, and journals from Finland's National Library. The players are effectively checking the OCR that computers have done already.



- **Teaching Game:** Teaches you something using real gameplay.
- **Meaningful Game:** Uses gameplay to promote a meaningful message to the player.
- **Purposeful Game:** Uses games to create direct real world outcomes.

Simulation

A simulation is a virtual representation of something from the real world, such as a flight simulator. Often this can be hard to distinguish from a game or a serious game, as they look very game like. The difference is that a simulation does not usually need gameplay elements in order to function and fulfil its designed intent. It exists to allow users to practice an activity in a safe environment.

Simulations are not a new phenomenon either, with military simulations in one form or another used since the start of organised warfare. The birth of modern wargames and simulations has been credited to Herr von Reisswitz, Prussian War Counsellor and his war game *Kriegsspiel* in 1812. This was a military game / simulation that each regiment was encouraged to play on a regular basis to test out strategies and tactics without having to risk troops.

Simulations can take many forms; physical such as board games or role-playing, digital like computer based flight simulations or business simulations, or blended where you have a bit of both as in augmented reality.

An interesting example of this is Cornak. This game sets out to teach you the basics of selling products and managing a client portfolio. It simulates a company that sells red and blue cubes and puts you at the heart of managing it. On the one hand, you could say that this is a teaching game, as it has scenarios and is about a fictitious company. Where a teaching game, like Phanotmation, was all about teaching you how to do something, a simulator is about giving you a virtual way of practising something.



Games / Play / Toys

Find out more about Play in these posts

- [Play, games, toys, playfulness and gamification](#)
- [Learning about playfulness from Toca Town](#)

Ok, this is a bit more complicated. I originally started with just games here but was challenged by a few people including Prof Richard Bartle. The challenge was “Where does play come into this?”.

Now, I have to admit, I was not ready for this and had to think hard, read hard and discuss hard. For those who don't know, there is a very academic conversation to be had around what a game is. There is no true single definition, but most accept that it is a type of play. Play, in this context, is confined only by implicit rules. A ball is governed by implicit rules such as gravity. You don't impose gravity on a ball, it is just there.

Play begins to become a **game** when you start to add explicit rules to it. If I kick the ball through a goal, I get a point and win (Zero sum). If we work together to get the ball through a series of obstacles, we win (non-zero sum). For some, this will boil down to competition (with the system or other players) and cooperation. For others, there is much much more to it!.

Toys come into this as another part of play that is important to consider. A toy seems to have two main varieties. An object or representation of an object that obeys implicit rules,

but has no explicit rules on its own. So a ball, a transformer etc. You can play with them however you want, within the toys own rules - gravity, shape, fragility etc. The other seems to be a playground. Take Gary's Mod or Minecraft (in creator mode). You are in a virtual world that has its own implicit rules for how the world behaves and the restraints that you as the player have within the world (magic circle). With Minecraft, this would be things like how far you can dig down, how far you can dig up, how certain blocks behave with other blocks. However, within those constraints, you can do what you want. You can use the world itself as a toy.

There are hundreds of thousands of words dedicated to this conversation, but for me, it is important not to forget the importance of play when you look at Game Thinking.

Back to **games** and I have split them up into 2 basic categories. Entertainment and Art. Entertainment is what most people would consider games. Call of duty, Civilization, World of Warcraft - that sort of thing. Art is more subjective. I would consider a game such as Proteus more art than game, some would not. That can be discussed elsewhere I am sure!

I have added a third type under games, that dotted lines back into serious games - Advergaming. These are proper games that are created to advertise something. The game is real, it plays like a game, but at some stage, it is being used to try and sell you something. I have not put this directly under serious games as personally, I feel that serious games should serve something resembling a higher purpose - possibly snobbish on my part, though.

- **Play** is free form and has no extrinsically imposed goals. It is done for fun or joy.
- **Games** add defined goals and rules to play (such as challenges)
- **Toys** are objects that can be used in play or games.

A decision tree to work out if it is a Serious Game, a game or anything else!



Game Thinking Decision Trees

The Game Thinking Spectrum

As an update to this article, in 2017 I created the **Game Thinking Spectrum** to help understand when to use what in the world of games based solutions. They all live in the same arena and should all be considered with equal merit for solutions and used on their own or together to create the best solutions.



Game Thinking Spectrum

Aesthetic

At this end of the spectrum, the solutions share the look and at times the feel of games, they are more “game-like” than they are game.

Structure

Around the mid-point, the solution will not only have the look of a game, they will also share structural comparisons. Challenges, narratives, scoring systems, RPG elements, feedback, progress etc.

Gameplay

As we move to the gameplay end of the spectrum, the solutions are more game than game-like. They have true gameplay and all of the trappings one would expect with a true game, whether it is for more serious purposes or for pure entertainment.

A simplified look at the classifications

This is an image I used to use, but I still see floating around - so must be useful. it is self-explanatory



Serious Games vs Gamification Quadrant

(I think!!)

So...

All of these approaches [flow](#) between each other and can be mixed and matched in any way needed to create the best solution for a client. Never limit yourself by definitions, semantics, lack of understanding or lack of willingness to try new things!

What now?

This is my take on Game Thinking. For me, this represents the majority of things you should have in mind when you hear the word gamification. Limiting yourself to the standard definition is going to reduce how effective your thinking will be when it comes to designing

solutions for people. I know that others have other ideas - so I throw this open to you all to interpret, add too and take from.

Huge thanks to everyone in the [Gamification Google+](#) group who helped my thinking here!



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