Briefing:
An Introduction to Gamification

November, 2013

CONTENTS

1. INTRODUCTION TO GAMIFICATION

By our very nature human beings engage in games of all types. We like games. We may not all like the same type or style of game but we as a species like games. Early archaeology has unearthed rudimentary dice as old as 3000BC in the Americas and elegantly carved board game pieces in Turkey from 2900BC, so clearly this penchant for games was alive and well many moons ago. More recently games were used by military tacticians to develop the skills of officer recruits from 1780 onward with Helwig then Von Reisswitz and the introduction of Kreigsspiel in the 19th century. Stepping forward in time, by 1956 businesses and the US Airforce utilised programmes such as Top Management Decision Simulation and the US military started to use a modified version of the computer game Doom in 1998. To this day both are stalwart supporters of the efficacy of computer games and gaming as part of military training. In education by the 1960s the concept of Computer Assisted Instruction (CAI) was coined and this drill and practice approach matured over subsequent decades to become adventure formatted games with titles from Lucas Learning and The Learning Company. Research and revenues point to a decline in the Edutainment industry during the 1990s, perhaps in part due to the word "game" having and continuing to have a negative connotation. Nevertheless this is now to a degree rebounding, not least influenced by the ubiquity of handheld devices and is likely to see significant growth. An introduction to the more recent inculcations of gaming and in particular, from an IT perspective, the rise of the Massively Multiplayer Online Game (MMOG) is provided on the MMOG pages of this website.

1.1 Sources & Further Reading:

Other links to excellent introductions to gamification, gaming and edutainment are:

http://www.news.nationalgeographic.com/news/2010/12/101210-dice-gaming-gambling-native-american-indian-casinos-science/

http://www.hyperallergic.com/80050/archeologists-uncover-5000-year-old-game-board-pieces

http://www.eduquery.com/jaet/JAET4-1_Dondlinger.pdf

http://weisenfeldj.wordpress.com/2011/07/28/marzano-r-j-2010-developing-expert-teachers-in-r-j-marzano-ed-excellence-in-teaching-10th-ed-bloomington-in-solution-tree-press/

http://talpalink.co.uk/resources/games+technologies+for+learning$2C+more+than+just+toys.pdf

http://hypertext.rmit.edu.au/dac/papers/McGonigal.pdf

Marczewski, Andrzej 'Gamification: A Simple Introduction' (eBook available Amazon, iTunes 2013)

Egenfeldt-Nielson, Simon 'Beyond Edutainment: Exploring the Educational Potential of Computer Games' (lulu.com, 2011)

2. SO WHAT IS GAMIFICATION?

The best evidence suggests that the term "gamification" joined our vernacular some time during 2004 but did not become popular as a word to describe the underlying concept until 2010. Clearly this section of the website is aligned to the study and investigation of "gamification" and if you've navigated to this area then there is a high probability that you are also interested in this concept. As one of the four areas of convergence it is contended that this concept is, and will continue, to drive a revolutionary shift in perception for businesspersons, politicians, educators, scholars, researchers, scientists and just about everyone over the coming decade.

In short, it is about harnessing the hugely powerful human emotions and psychological phenomena evidenced in game playing to drive increased engagement, performance and productivity. In length, it is the application of game design, game methodologies, game approaches, and game mechanics to non-game situations for a multiplicity of purposes of, including but not limited to:

- Customer engagement, development and retention

- Employee & student behaviour modification, development and productivity/performance improvement

- Brand building, enhancement, recognition, consistency and loyalty

- Channel & Partner commitment, incentivising and experience enrichment

- Government publicity, outreach and population re-enfranchisement

While the end goals for those who integrate gamification into their technological and operational processes differ, for instance in:

- business terms, the underlying goal is often driven by the need to build longer-term lasting relationships, to achieve 'fanversion' (the conversion of customers into fans and evangelists) thereby achieving higher revenues through a maximised Lifetime Customer Value (LCV); and

- government terms, the goal at a local level is often to build a deeper sense of community, to unify disparate groups through encouraging the more social aspects of technological interaction with the offices of county, state or central government and through this to address significant socially divisive issues, such as democratic deficit and population disillusion

the mechanisms for realisation remain ostensibly the same. Clearly the breadth of audience for how and where gamification can be used is enormous. The core point though is that embarking on a gamification initiative means carefully determining the specific "success measure" and understanding the particular "use cases" which are applicable. From the evidence to date, nothing is surer than if used in the wrong context gamification is far from a panacea and may have unfortunate negative consequences.

2.1   Sources & Further Reading:

http://www.gamification.org/wiki/Gamification

http://articles.latimes.com/2011/oct/19/local/la-me-1019-lopez-disney-20111018

http://www.allvoices.com/contributed-news/15796427-has-gamification-peaked-already

3. A BRIEF INTRODUCTION TO MOTIVATION

It was identified earlier that gamification is about harnessing the hugely powerful human emotions and psychological phenomena evidenced in game playing to drive increased engagement, performance and productivity. At the outset of a gamification programme the question arises as to what are these powerful emotions and why are they significant? This point goes to the heart of the matter and underpins every aspect of the design effort. The greater the emotional involvement elicited in the player the greater the enjoyment factor of the player and, in theory, the greater the outcome for the programme.

This area of research is founded in psychology and in particular in our (as yet nascent) understanding of motivation. There have been many research projects in academia to investigate the underlying motivators of behaviour, whether they are by nature or by nurture, with often surprising and unexpected results:

- starting with the famous William Blake and his 1890 instinct theory which identified a number of physical and mental instincts which by nature are embedded within us from nature;

- then to the drive reduction theory of motivation which sought to link biological 'needs' to behaviour instigators;

- the studies of Kurt Lewin on nature vs. nurture and his famed equation of $B=f(P,E)$, behaviour is a function of the person and their environment;

- the research of B F Skinner who followed on from the work of Edward Thorndike and incentive theory which proposes to explain motivation through the prism of promised outcomes – his famous experiments (1948) with operant conditioning highlighted 'proof' of a kind for some of the incentive based behaviours;

- in parallel though Skinner's experiments though were eclipsed (certainly in psychological circles notoriety, arguably with hindsight in infamy) by those of John Broadus Watson whose famous conditioning of a 9-month old child also yielded behavioural modifications – in this case the inducement of a rat phobia;

- to the almost ubiquitously famous (particularly in business schools) Maslow's Hierarchy of Needs theory, named after its creator Abraham Maslow and presented in a seminal paper in 1943 entitled "A Theory of Human Motivation" and expressed again including curiosity in his 1954 book "Motivation and Personality";

- there are also the lesser renowned experiments of Harry Harlow in the 1940s whose rhesus monkeys appear to have displayed a 'curiosity' motivator rather than any underlying biological or instinctual motivator (i.e. food, sex, etc.) delivered a new term to behavioural psychology – that of intrinsic motivation;
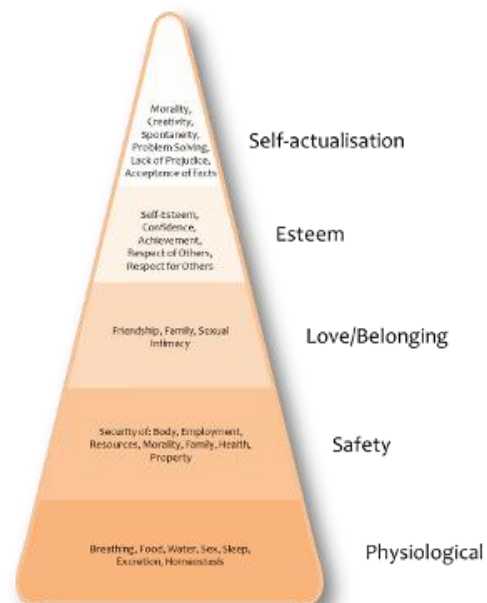
- the interesting behaviour experiments of Stanley Milgram whose experiments on obedience with (pretended) electric shocks delivered under instruction by participating students to those failing to answer queries correctly resulted in a 65% acceptance rate of delivering a notional fatal shock, highlighted to Milgram that it is less the kind of person you are as it is the situation you find yourself in that drives a certain behaviour;

- the studies of Victor Vroom and the Expectancy Theory of motivation which proposes that an individual will decide to behave in a particular way founded on a preference of one behaviour over another on the basis of an expectation of greater gain in the outcome. This is summarised as M=ExIxV (motivation = expectancy x instrumentality x valence);

- to the studies of Edward Deci and Richard Ryan in 1969 whose surprising findings revealed that in certain circumstances extrinsic motivators or outside influencers, for instance monetary rewards, could have negative consequences for motivation and that humans also had an "inherent tendency to seek out novelty and challenges". Their Self-Determination Theory provides a basis of motivation formulated on autonomy, relatedness and competence;

- the chilling, arguably extreme outcomes, from the famous experiments of Philip Zimbardo at Stanford University which laid bare the some astounding insights into both the fragility and nastiness of human behaviours under certain circumstances – often called the "Lucifer Effect"; and

- finally to the work of B F Fogg on creating habits, automating behaviour change and the Motivation Wave which provides a framework approach to understand and influence online behaviours.

This learning (and much more) over many decades delivers insights in the nature of human motivation and its linkage to behaviour. Fostering as much of a grounding as possible in these psychological sciences is critical for both game and gamification designers. At a minimum, designers should be well versed in:

- Intrinsic motivation – refers to a class of motivators that are exhibited through native interest, curiosity or enjoyment of the (in our case) game itself. This type of motivation is extant within the player and does not require recourse to external influences It can be considered a natural motivational tendency within players who will likely engage in gameplay willingly either for its own sake, for learning reasons, for curiosity reasons or for reasons which the player perceives as a benefit to them;

- Extrinsic motivation - refers to the playing of a game in order to achieve or attain an external outcome. This motivation class is externally influenced by money, rewards, badges, grade enhancement, punishments, competition, etc. and can occur in conjunction with intrinsic motivation.
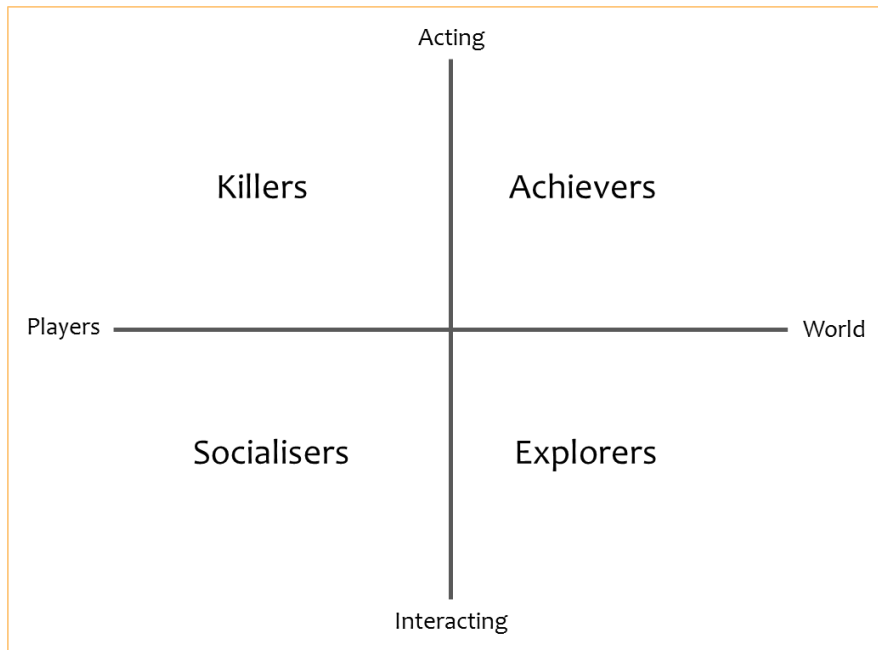
3.1   Bartles Player Types – Brief Overview

It is worth a note in conjunction with motivational instincts mentioning the work of Richard Bartle who examined the players of Multi-user Dungeons (MUDs) a precursor to today's Massively Multi-user Online Games (MMOGs) wrote a paper to answer the seemingly simple question "What do people want out of MUDs?"

Through painstaking research of thousands of bulletin board pages Bartle isolated four main reasons as being typical for those who enjoyed the game: achievement in the game, exploration

of the game space, socializing with others, and imposing upon others. This is visually represented below:

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                              Acting
                                |
                                |
                                |
              Killers           |          Achievers
                                |
                                |
    Players ────────────────────┼──────────────────── World
                                |
                                |
              Socialisers       |          Explorers
                                |
                                |
                                |
                            Interacting
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Bartles players highlighted specific motivational criteria, for instance:

- Achievers – played the game with a focus on doing things in the MUD becoming entirely immersed in the games universe. They sought to achieve things and build their own status;

- Socialisers – played the game to interact with other players in the game. Today this is analogous to using the "chat" aspect or "message" aspect in the game. They tend to want to meet with people within the game universe;

- Killers – played the game to carry out acts on other people, to do things to other players, ultimately to kill other players' characters within the game universe;

- Explorers – played the game primarily to explore the space and to be surprised by things within that space. They derived a sense of wonder and amazement from roaming the game universe.

This excellent research paper provides a direct insight into the minds and motivations of players and helps in a gamification sense to highlight that motivations are diverse and numerous, and that "reward" as a concept means entirely different things to different people.


3.2   The Motivation Wave

Another more recent theory on motivation (mentioned above) was provided by DR B F Fogg of Stanford University who posited the notion of a motivation wave. From a gamification perspective this wave provides an insight and a model, formed on the basis of his research at Stanford and with commercial enterprises, for:

i)   Identifying peoples motivation;

ii)   Triggering a change in that motivation; and

iii)   Monitoring progress through motivational change

The model can be visualized as:
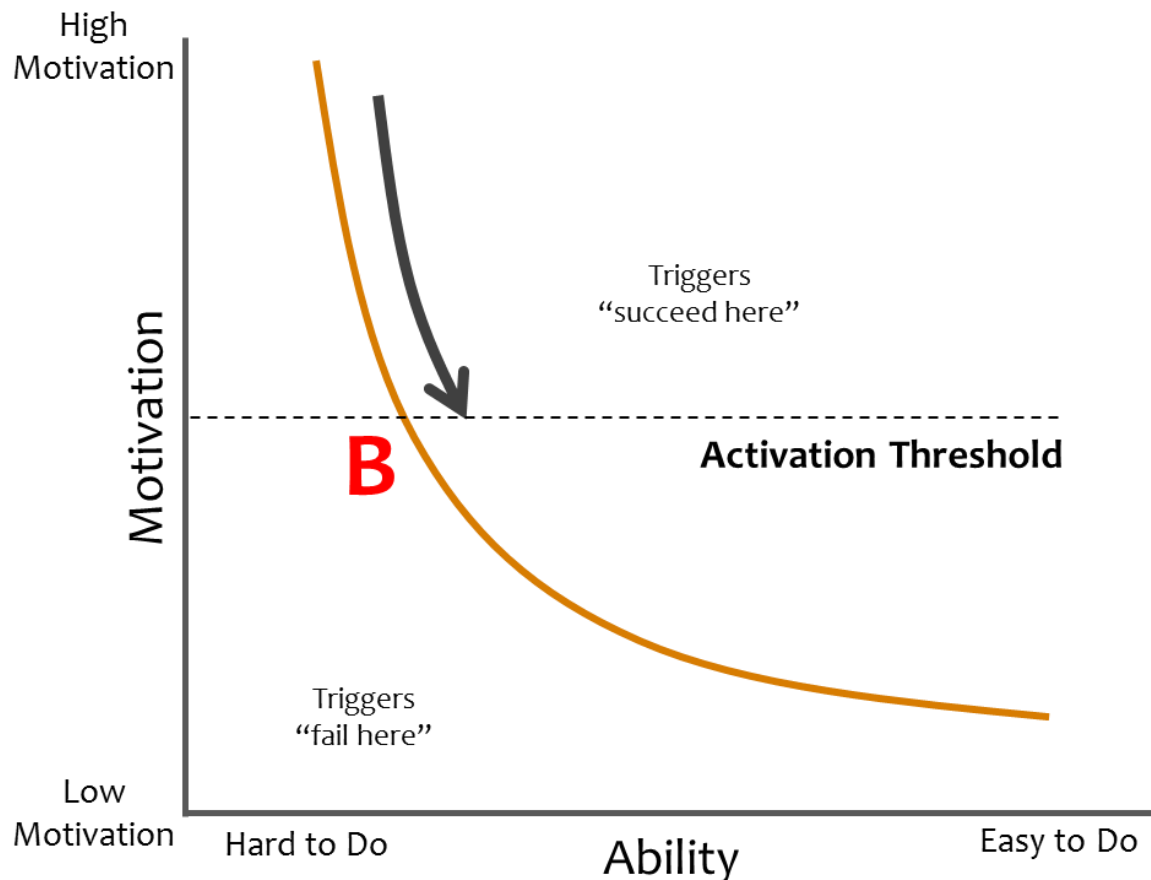
Essentially the Fogg Behavioural Model (FBM) postulates that there is a point "B" for every individual where their motivation is high enough, their ability is sufficient and there is a trigger. At this point for this individual the required Behaviour happens. In this case:

Behaviour = Motivation x Ability x Trigger

3.3   Sources & Further Reading:

http://psychcentral.com/encyclopedia/2008/drive-reduction-theory-of-motivation/

http://prezi.com/9jcqxt2h6cfk/theories-of-motivation/

http://psychology.about.com/od/profilesofmajorthinkers/p/jamesbio.htm

http://psychology.about.com/od/psychologytopics/tp/theories-of-motivation.htm

http://en.wikipedia.org/wiki/Motivation#Incentive_theory

http://en.wikipedia.org/wiki/B._F._Skinner

http://explorable.com/incentive-theory-of-motivation

http://en.wikipedia.org/wiki/Kurt_Lewin

http://en.wikipedia.org/wiki/Expectancy_theory

http://www.selfdeterminationtheory.org/

http://en.wikipedia.org/wiki/Self-determination_theory

http://en.wikipedia.org/wiki/Stanley_Milgram

http://www.youtube.com/watch?v=yr5cjyokVUs

http://www.youtube.com/watch?v=sZwfNs1pqG0

http://www.bjfogg.com/

http://www.mud.co.uk/richard/hcds.htm

http://marczewski.me.uk/2012/12/31/an-interview-with-richard-bartle-about-gamification/

Pink, Daniel 'Drive: The Surprising Truth about What Motivates Us' (Canongate Books, 2011)

Chatfield, Tom 'Fun Inc' (Random House Group, 2010)

4. INTRODUCING THE CONCEPT OF FLOW

The final piece of the motivational jigsaw in understanding the concept of gamification is to understand the notion of flow. In 1990 Mihaly Csikszentmihalyi introduced the world to his theory of 'Flow'. From a gamification perspective this theory helps prospective designers to understand a means for optimising the player experience. So what is flow? Flow is defined by Csikszentmihalyi as those times when you are "being completely involved in an activity for its own sake. The ego falls away. Time flies. Every action, movement, and thought follows inevitably from the previous one, like playing jazz. Your whole being is involved, and you're using your skills to the utmost." The theory itself is based on over 20 years of his research into what makes people happy, and at a high level the outcome is akin to when professional sports people talk of their hot hand in basketball, or being in the zone in tennis. What they are describing is certainly very real for them and while yet objective evidence would suggest it is illusory.

The Flow Theory provides for eight bases or components to the flow:

- A challenging activity requiring skill – optimum playing experiences (or broader) occur most frequently within activities that are goal oriented, bounded by rules, require investment or attention and skills;

- A merging of action and awareness – a ubiquitous feature of the research revealed that being in the Flow means awareness of self dissipates and action becomes autonomic, spontaneous and without thought;

- Clear goals – the delineation of goals are required to be clear and known;

- Direct immediate feedback - a recognition or feedback mechanism is also crucial to enjoyment;

- Concentration on the task at hand – Flow exhibits the characteristic of obliviousness to surroundings and situation. Only the focus at hand is distinguishable in the thoughts of the person in flow;

- A sense of control – paradoxically, in light of the above, the sense of control is enhanced in the player and there is no comprehension of losing control of the play;

- A loss of self-consciousness – those in Flow relate an experience absent of self as if only the game exists;

- An altered sense of time – it is commonly recorded that time appears to slow and passes in an unusually decelerated manner.

In addiiton Csikszentmihalyi defined a visual model for when flow occurs:

A Modified Model of Flow
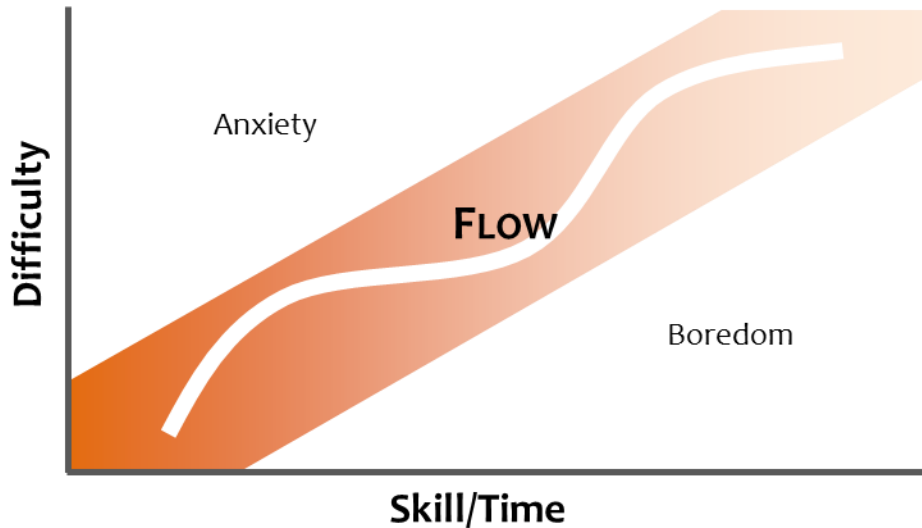
This model has been slightly modified from Csikszentmihalyi's model for the purposes of simplification but does provide an excellent high-level guide for game and gamification designers to develop and test scenarios of game play. For instance, if we design the evolution of player skill within the game and model this in a typical stepwise manner for two gradation plans thus:
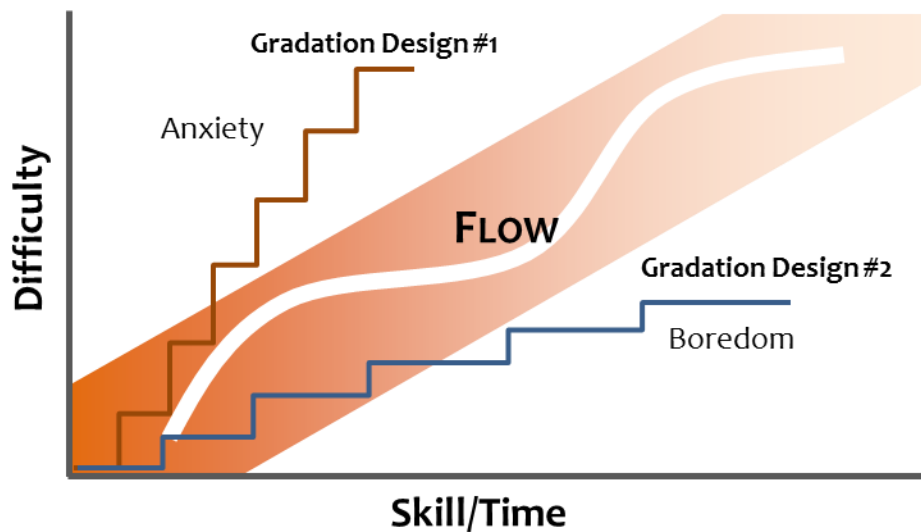
Gradation Model Scenarios
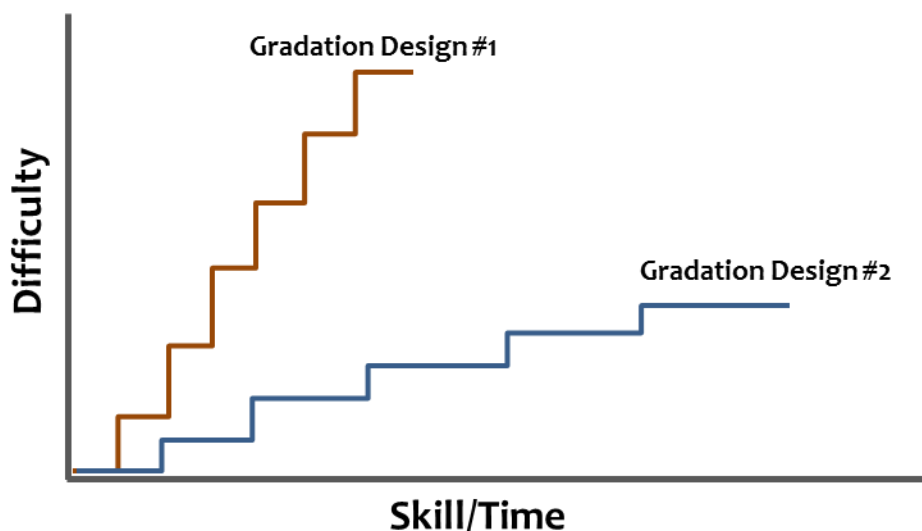
and we overlay this onto a Flow model for the same game we can we can discern that in this instance the game level gradation in Scenario #1 is too step which leads to player frustration and anxiety and that of Scenario #2 is too moderate leading to boredom.

Flow of Gradation Scenarios

The goal of game and gamification designers is to develop the optimal level of difficulties, sufficient to maintain interest, development and excitement without becoming too difficult or too boring. The aim is to develop "Goldilocks" game play or (in the case of gamification) game mechanisms. For further deeper insight into this please see Marczewski's excellent introduction to gamification pages 137 to 155.

4.1   Sources & Further Reading:

http://www.ted.com/talks/mihaly_csikszentmihalyi_on_flow.html

http://psychology.about.com/od/profilesal/p/mihaly-csikszentmihalyi-biography.htm

http://www.slideshare.net/ismaniyar/bbva-innovation-edge-gamification

http://psych.cornell.edu/sites/default/files/Gilo.Vallone.Tversky.pdf

Csikszentmihalyi, Mihaly 'Flow: The Psychology of Optimal Experience' (Harper and Row, 1990)

5. GAMIFICATION 1.0

In a sense gamification is not new, since (albeit in a rudimentary form) the turn of the century commercial organisations have realised the intrinsic value of loyalty programs (Sweet Home Laundry in the 1800s), frequent flyer miles (United Airlines 1972), cereal box toys (Kellogs 1090), baseball player cards (Peck & Snyder 1868), employee-of-the-month schemes, and many more inculcations. The rise of the Internet and computing has ushered in a modern twist and enabled new cleverer and more appealing, models and structures to be invented with companies such as Bunchball, Foursquare, Badgeville and Gamification Co. leading the charge.

These new models are exemplified by the story of Foursquare which provided a simple mechanism for mobile users to "check-in" or post their location into a mobile application in return for points or rewards. The hook created is the more "check-ins", the more points, the more points the higher gradation to "Mayor" status with associated "Badges". By integrating with Facebook and Twitter this generated fervour for badge acquisition and status graduation. This was a highly successful example of gamification and provided huge stimulus and invigoration for gamification around the globe. In parallel probably the best known traditional gamification schemes in the UK is that of the Tesco Clubcard which was introduced in 1995 which awards points for purchases. There are thousands of such schemes around the world where members can effectively gain discounts off future purchases by continuous fealty to the issuer. Another example would be that of In-Game Points or statuses awarded in online games, mobile apps or MMOGs which enable the player to purchase additional capabilities or objects with this virtual currency.

All of these contrivances exhibit the use of game mechanics as part of their underpinnings. They are very simple to spot in video games but the mechanisms exist in loyalty cards too. In the most simple of terms provided by Marczewski (Page 128) "a distinct set of rules that dictate the outcome of interactions within the system. They have input, a process and an output" with the player or customer or user responding to collections of these mechanisms. The main aspect of commonality for them all though, irrespective of the real world or virtual mechanisms employed, is that of incentive for the purveyor. Their incentive is to positively effect Lifetime Customer Value(LCV) to achieve higher average revenues per customer, user, player, etc. They do this and are doing this by converging two major concepts:

1) Gamification "for the hook"
2) BigData Analytics "for the analysis and improvement"

Before computers it wasn't physically possible to understand the patterns of user, customer or player behaviour in the way we can now. Indeed, even today we are merely at the edge of the abyss of data that can now be churned to truly understand behaviours. Gamification 1.0 for those employing it has been about harnessing, acquisition and rudimentary analysis (it is noted that this analysis is far better refined than in the 1960s, 70s, 80s, 90s and 00s and improving fast – but it pales into insignificance under the weight of "Exascale" analysis) to try to better align sales messages through:

- Customer trend analysis
- Targeted (even individual) incentive communications
- Improved negotiation basis
- Product placement
- Brand enhancement
- Site (physical and virtual) location

- Seasonality awareness and supply chain optimisation
- Revenue growth strategy development

and many more (see section "5.2 Game Analysis" below). There are detractors to the gamification promise and recent reports it must be acknowledged have pointed to its demise on the basis that the current inculcation has a skew focus towards extrinsic motivations. In this regard Gamification 1.0 has been and could be referred to as "competition-isation" and on the whole, for many early implementations, this would not be a wholly unfair comment. That noted, this was Gamification 1.0 where early use cases and conceptualisations were implemented exhibited all the trademarks of something new with the usual mix of technological and operational teething pains abounding. Every concept matures and gamification is no different. The gamification market is now growing fast and is estimated to achieve a global revenue of $2.8 Billion by 2016, almost doubling now on an annual basis:

Global Gamification Market Growth Projection
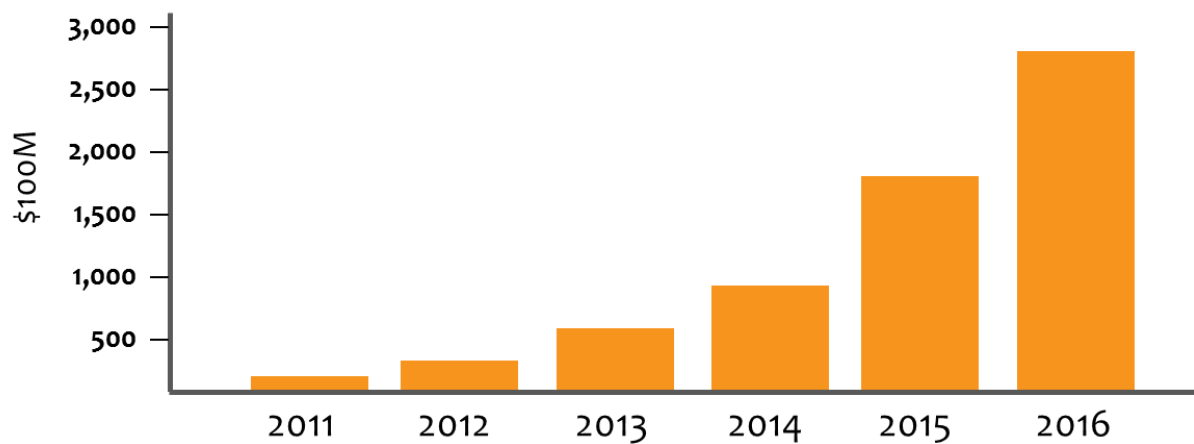
5.1   Structural & Content Gamification

A couple of final areas of definition require coverage before moving forward to an outline of Gamification 2.0. The first of these is the necessity to understand the nuances of structural and content driven gamification based on the work of Kapp et al. These definitions help when designers are making decisions on the type of game mechanisms to deploy and employ within the game construct.

Structural gamification can be viewed as the deployment around the game space of game mechanisms which can create player momentum but which do not directly change the content of the game itself. On the other hand content gamification involves the deployment within the game space of game mechanisms, game components and game strategies which requires a change (sometimes a comprehensive rethink or redesign) of the game itself.

Structural Gamification Element	Description	Mechanism for Deployment
Goals	Clearly articulated and transparent presentment of the desired goal or outcome of the game to the customer,	Clearly displayed and described:

Structural Gamification Element	Description	Mechanism for Deployment
	player or user. The obvious example in educational or simulation games is the achievement of the certification, examination or other objective measurement of success. In MMOGs or video games this is often the "end point" or "final quest" and in real world scenarios this can be the accumulation of sufficient "points" to acquire a free flight (air miles) or stay in a particular hotel (hotel reward points). There can be sub-goals or incremental achievements, often evidenced as mini-tests or attainments of particular items within the game space which help structurally to propel or incentivise the customer, player or user momentum.	1) Rules, including conduct expectations, appeals mechanism, support contacts, legal and HR requirements, etc. 2) Tutorials and helpful notes 3) Frequently Asked Questions (FAQs) 4) Helpful hints on expected time per level or progression step 5) Helpful hints on paths and approach
Progression	To maintain momentum, interest and motivation the technique or mechanism of progression is employed to highlight to the customer, player or user their specific position in terms of progression to the end goal. This is usually provided as a level indicator or a visual stimulus bar which makes clear the completion status, for instance 33%, or 3/10, noting a promotion to Professional from Amateur.	Clearly displayed and described: 1) Rewards 2) Rewards Schedules 3) Bonuses 4) Points 5) Badges 6) Levels 7) Currencies 8) Leader board 9) Rankings 10) Status 11) Countdowns 12) Discovery quests 13) Cascaded information
Challenge	The game itself and the design of the progression should stimulate but should also challenge. Customers, players or users will not "value" the achievement if it was far too simple and easy. The design of the structure, path,	Clearly displayed and described: 1) Status 2) Ranking

Structural Gamification Element	Description	Mechanism for Deployment
	progression and associated levels should be sufficient to lead to the end goal but not too simple as to generate the boredom we reviewed as part of "flow above.	3) Position on leader board 4) Social media tie-ins (Facebook, Twitter, etc.)
Transparency	Of significant importance in social or casual games the notion is to make clear to all players the progression of others through the game as this stimulates rivalry perhaps even envy and drives performance. A note of caution though – in workplace training it may not be appropriate to be as transparent with the scores of colleagues as in the casual games environment. It also relates (as identified above) to being absolutely open and clear about how points, rewards, levels etc. are earned.	Clearly displayed and described: 1) Status 2) Ranking 3) Position on leader board 4) Social media tie-ins (Facebook, Twitter, etc.)
Status	The Facebook generation is very status oriented and social media linkages are expounded well in many gamification implementations (see Foursquare above). It is often the case that "bragging rights" can help motivate and propel performance within many groups or communities. In this regard the acquisition of badges or mini-awards, certifications, etc. and their posting publicly is denoted as a status mechanism.	Clearly displayed and described: 1) Status 2) Ranking 3) Position on leader board 4) Social media tie-ins (Facebook, Twitter, etc.)
Time	The use of time needs to be given deep consideration. The key is to maintain interest and momentum without producing a feeling of immediacy to completion – the idea in the customer, player or user of just "getting it out of the way" or "getting it over with". Good gamification (especially if being developed within a business training context) uses time to show a consistency of approach to the specific audience with a modular release of content over an expected term. In open "infinite space" style MMOG or	Clearly displayed and described: 1) Modules 2) Helpful hints on expected time per level or progression step 3) Helpful hints on paths and approach

Structural Gamification Element	Description	Mechanism for Deployment
	videogames, and with casual games, this is less of a consideration as players will play for as long as it takes to achieve the incremental or final goal. In these situations time is also a key consideration for designers. The key then is to make the progression (in time terms) sufficient to retain interest without inhibiting progress to the point of wash out or quitting.	
Feedback	Designs need to incorporate clear feedback to the customer, player or user. This feedback should be direct and if feasible real-time. In education or simulation games this is an absolute from the point of view of directing corrective actions or re-examinations as part of progression. Often mini-tests or quests or trials are configured to highlight the score during the activity so the customer, player or user can make the necessary corrections during the activity. This greatly reduces the annoyance factor related to completion and then receiving a fail grade or score.	Clearly displayed and described: 1) Status 2) Ranking 3) Position on leader board 4) Helpful hints 5) Follow up communications 6) Attempts remaining

Content Gamification Element	Description	Mechanism for Deployment
Story	Clearly articulated storyline for the game. This is critical to attaining interest in the first place before the customer, player or user even commits to becoming part of the game. Story-telling is an ancient tradition and a "good yarn" is much more memorable than a set of factual dates, times, locations etc. Many memory guru's outline the benefits of using visualisation and association to help perform incredible feats of memory. Clearly in MMOG or videogames the storyline can be an incredible quest,	Clearly displayed and described: 1) Overall storyline 2) Module storyline 3) Task, quest, trial, etc. storyline 4) Epic meaning storyline 5) Community collaboration storyline

Content Gamification Element	Description	Mechanism for Deployment
	space adventure, war, etc. but employee training purposes or classroom gamification much more imagination must be put into abstracting the areas to learn and forming them into a cohesive and compelling story which can then be broken down into the specific game mechanisms.	
Curiosity	The ability to derive and engender curiosity is used well within MMOG and videogames. Presenting decision junctures for customers, players and users where they can choose to "fight or flight", or chose to roam and explore the game space is critical.	1) Decision junctures/choices 2) Infinite spaces 3) Alternate paths 4) Discovery quests
Challenge	A core element of engaging the customer, player or user. Presenting the problem or task or battle in a manner that engages from the outset. Make clear the challenge ahead and the goals to achieve in response to the challenge. Challenges can also be used to foster collaboration with certain tasks better achieved with others, perhaps only feasible as a group or team.	1) Challenge storyline 2) Objectives 3) Rewards, bonuses, currencies, etc. 4) Level 5) Virality i.e. team collaborative tasks
Characterisation	Many companies have realised (both real world and virtual) the sticky nature of being able to customise their character or card. Having an American Express Black is a symbol of wealth and status, equally having the right sword or shield or weapon. Many of these can be rewards for tasks but also capable of purchase with the game currency. Note: The ability to customise is also a fundamental element of monetisation.	1) In game stores 2) Custom loyalty cards 3) Rewards choices
Freedom to Fail	No one likes to fail but failing in a game situation when you can instantly retake or retry the module, quest, trial, etc. is easier for a customer, player or users to stomach. In this way the content should be configured and structured in a	1) Well described 2) Retries 3) Re-takes 4) Death

Content Gamification Element	Description	Mechanism for Deployment
	fashion that leverages the innate ability in games to "have another go". In many ways tracking the failure attempts is an excellent gauge as to the engagement effectiveness of the game.	5) Save junctures or points
Interaction	This fundamentally differentiates games from rote learning, research or study. Content gamification delivers the customer, player or user with the ability to "do things". This in and of itself generates a degree of curiosity but also nurtures a feeling of empowerment and independence.	1) Character movement 2) A game space 3) Quizzes, tests, etc. 4) Quests, trials, etc. 5) Simulations 6) Behavioural momentum 7) Countdowns 8) Dexterity challenges

5.2 Game Analytics

The final aspect of Gamification 1.0 to understand is that of game analytics and in particular the business intelligence aspects of game analysis. The analysis of customers, players and users in Gamification 1.0 is often deployed in an ad-hoc fashion and while the various functional owners' involved (game designers, Sales, marketing, human resources, operations, IT, service providers, and no doubt many more) employ specific point capabilities they rarely integrate to the degree necessary to evolve a total view of the customer lifecycle. There are several good reasons for this; the level of IT integration involved, the newness or novelty of gamification itself, the required processing capability, and the real-time requirement of that capability; and several bad reasons the speed to market takes precedence, the need to have something, the lack of a single point of ownership and the silo nature of development. Nevertheless a significant evolution in capability to derive the necessary underlying data is being developed in the domain of game analysis, particularly in MMOG, online and videogames which casts a light forwards to what will be feasible in Gamification 2.0. This section will focus on those advancements for two reasons:

1) To outline at a high level what can be delivered today within the confines of Gamification 1.0; and

2) To provide a primer for the description of Gamification 2.0 and what we can expect to see being delivered in the near future (18 to 24 months)
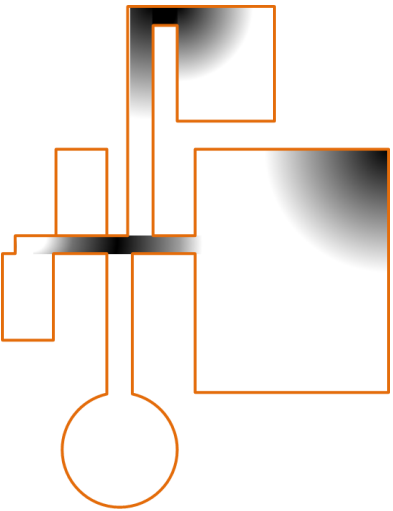
Notwithstanding the tremendous efforts, incredible innovations and dedication of many information technology professionals and data scientists it would be a fair assessment of the field of game analytics today (2013) to say it is a nascent and emergent technology or competence. Its origins were determined by game design necessity and the need by designers to understand game interaction which would enable better prototyping and feature/function testing.

Without getting bogged down into the vortex of computer science and programming specifics (which is far beyond this authors abilities) this need evolved very early on into areas such as
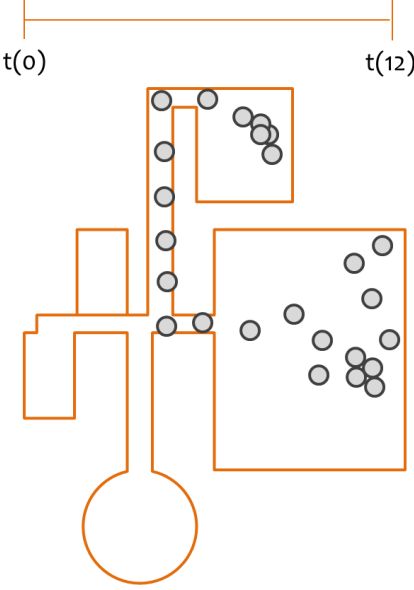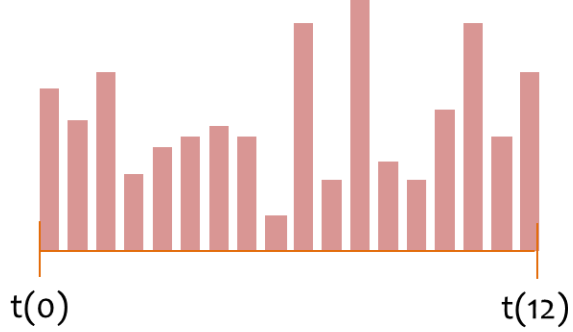
game telemetry which reports in game data over a distance, state machine logging services which track state data of the characters (system response, actions, etc), player data stores which hold metrics concerning the progress (achievements, levels, etc.), player characteristics data stores which hold characteristics on the avatars themselves (hair, dress, etc.), objects data stores which hold attributes of game objects (places, NPCs, descriptions, etc.), and even affinity data stores which hold records of "like" or "common" items (behaviours, objects, choices, etc.). This game specific data is supplemented by data coming in from and being gather for transmission to innumerable other sources/receivers, for instance profile data from social media networks (Facebook, Twitter), micro-transaction data from in-game purchases, advertising tie-ins for in-game adverts, payment system integration to accept payments, actual geo-location data, CRM integration and data feeds, and even psychographic IAO (interest, activity, opinion) variables data.
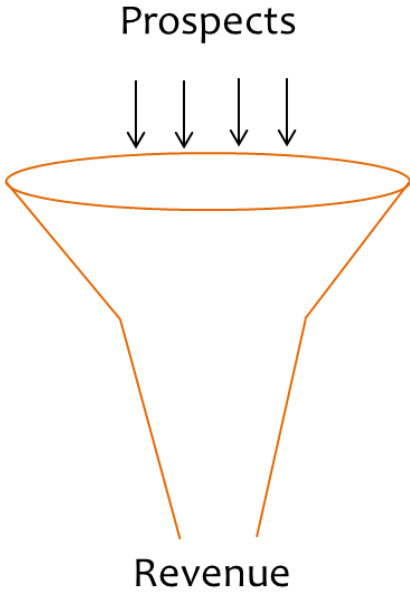
This data can then be fed into different Extraction, Transformation and Loading (ETL) processes which decant data into online analytic processing (OLAP) systems for the critical process of analysis. The analysis is where the 'magic' happens, where the raw data can be used by new processes which transform it into useable information of various forms. Business Intelligence (BI) processes takeover at this point and are used by the game provider, the service provider and others to gain commercially advantageous answers from patterns within the data. An introduction to BigData and analytics is covered in more detail on those pages of www.eamonnkillian.com. The following are specific game analytics areas:

Analytics Visual Representation	Analytics Description
	Heatmaps are an excellent way of analysing where game play has taken place. Different types of heatmaps can be produced to identify: ▪ Player density maps ▪ Kill maps ▪ Balance maps ▪ Performance maps ▪ Purchase maps ▪ Quit maps ▪ And many more …
	Financial Analysis of many key dimensions of the customer, player or user are produced: ▪ Monthly average users (MAU) ▪ Daily average users (DAU) ▪ Average revenue per user (ARPU) ▪ Average Revenue Per Paying User (ARPPU) ▪ User acquisition cost (UAC)

Analytics Visual Representation	Analytics Description
	• Lifetime Value (LTV) • Conversion Rate (CVR) • Entry Event Distribution (EED) • And many more …
t(0) t(12)	**Spatiotemporal Maps** for analysing the positions and movements over-time in the game space. Track and follow the movements of individual or groups of customers, players and users during their period in the game: • How do people play the game? • How do the travel within the game space? • How do they move in 3D space? • Do players congregate or cluster together anywhere? • Do they fully exploit the game space? • Are there bugs? • Are there exploitation spots? • Are there outliers?
t(0) t(12)	**Time Series Analysis** helps to understand temporal changes over bounded periods in: • Play behaviour • Resource choices • Usage (MAU/DAU) • Performance • Achievements • Resources used

Analytics Visual Representation	Analytics Description
Prospects Revenue	**Funnel Analysis** is used to help determine the average path to revenue cycle for customers, players, and users. This provides an ability to quantify the number of players through the trajectory of awareness of the product (visits), through interest (are they registering), to desire (actual activation and use), to action (real revenues from in-game or subscription fees), for instance: ▪ Visits per hour, day, week ▪ Registrations ▪ Activations ▪ First purchase

Other types of analysis and information visualisation techniques that can be carried out using this data are:

▪ **Affinity Analytics** – do items, challenges or actions naturally cluster together?

▪ **Progression Analytics** – are players performing and progressing according to expectations?

▪ **Prediction Analytics** – anticipating the actions of a player in the future?

▪ **Optimisation Analytics** – optimize operational delivery aspects – minimise cost; maximise revenues

▪ **Decision Support Systems** – make better decisions on marketing mix, channel partners, etc; and

▪ Many more.

In conclusion, there are two key points here:

1) Firstly it is clear from the foregoing that there are innumerable forms of analytics carried out in Gamification 1.0 today. However, they are often siloed in approach, focused on specific areas to answer specific questions, and using specific types or purpose built underlying source data warehouses. (Please note: the following example provided is admittedly entirely simplistic and purposely exaggerated to illustrate the point) This leads to a situation today where marketing could have what they believe to be a 360o degree picture of the customer or user based primarily on micro-transactional data, Click Through Rates (CTR) to external advertisements, and metrics such as user timings with some external supporting information from social media which predicts a further yield of X%, but the customer drops out entirely the next day. If there had been a more holistic view of the customer incorporating (a hit/miss ratio of 1/10, weapons used = stock initial

weapon) then it is likely that the predictive analysis would have yielded a warning flag as to the potential "walk away" of the customer due to their lack of knowledge on how to change weapons. Perhaps some behavioural factors such as inability to move beyond the starting compound was available which again would highlight a lack of knowledge of the game and that even though the user had bought more weapons and a comprehensive map they still dropped out possible due to frustration; and

2) While many of the "outcome" visualisations and informational reports provide an ability to impute, presuppose or predict the motivations of the customer, player or user they are very rarely (if ever) designed specifically from a starting point of motivation. This paper purposefully began with motivation to highlight specifically the anticipated metamorphosis in almost every facet of our lives over the next two decades due to the incredible abilities of BigData and analytics, not least in gamification where designing, architecting and delivering the underlying technologies and operational constructs for game providers will in the near future begin with a much deeper vision of the desired motivations to elicit in the target segment or audience.

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