A Virtual Worlds Primer

Executive Summary

This report provides an overview of virtual worlds – what they are, what they are used for and who uses them.

Virtual worlds are simulated environments on the internet, accessed via a computer and sometimes mobile phone. They are persistent, shared experiences for tens of millions of people around the globe.

There are three basic kinds of virtual world: games, social worlds and world building tools. While the technology for all three types is similar, each has a different range of uses and different user demographics. People of all ages around the world use virtual worlds. Some are targeted at specific age ranges, such as *Club Penguin* which is 6+ and *Second Life* which is 18+. However, *World of Warcraft* and other virtual worlds appeal to people from their mid-teens through to retirement.

From their invention in 1978 at the University of Essex, virtual worlds have grown steadily in popularity. Globally, the number of users of virtual worlds is now in the hundreds of millions, with several individual virtual worlds reporting figures over the 10 million mark. And these users are spending between two and four hours in a virtual world every day, often sacrificing television viewing time to do so.

Business models for virtual worlds include: subscription fees, micro-transactions, and advertising supported worlds - including fully branded spaces such as *Virtual MTV (*vMTV*)*. Within game worlds, complex economies thrive on the redistribution of virtual resources by individual users. Social worlds in particular find the users embedding traditional business models into the virtual world by offering goods and services such as marketing and design of virtual objects for real currency.

The commercial use of virtual worlds is increasing rapidly, especially in the market segment aimed at children. Many well-known brands have either launched or announced a virtual world. Examples include *Barbie*, *Hello Kitty* and novel brands such as *StarDoll*. Broader brands are also making use of virtual worlds. While much attention has focused on activity within *Second Life,* there is widespread use of branding in virtual spaces such as *CosmoGIRL!* within *There.com*, sub-branding of things like *Pepsi* within vMTV, and star appearances in *Habbo Hotel*.

Virtual worlds are increasingly being used in education and training as well. Many universities around the world now use *Second Life* and other virtual spaces to deliver classes. Companies such as *Forterra Systems* are specialising in virtual 'simulation' spaces.

Users of virtual worlds often see themselves as members of legitimate communities in their own right. As virtual worlds grow and persist potentially over decades, the implications of such claims are becoming more pressing. In the short-term future, we will see an expansion in the number and range of virtual worlds and a blurring of the boundaries with other forms of social media and augmented reality. The increase in the number of users shows no sign of slowing.

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the Virtual Policy Network

tVPN is a think tank dedicated to promoting international discourse about the public policy implications of virtual worlds.

More information can be found at:

www.virtualpolicy.net

1. Introduction

This report provides an overview of virtual worlds, including definitions, demographics, business models and statistics. It also looks at how companies and individuals are experimenting with virtual worlds now and what the future may hold. It covers *Second Life*, *World of Warcraft*, *Habbo Hotel*, *Multiverse* and others.

2. What are virtual worlds?

Definition

For the purposes of this report, virtual worlds are defined as online environments having the following characteristics[i]:

- A shared and persistent environment
- Interactions occurring in real-time
- An underlying automated rule set, the 'physics' that determines how individuals effect changes
- Individuals are represented within the world typically as individual 'avatars'

Using this definition, things such as *Second Life* and *World of Warcraft* are both virtual worlds, whereas forums, Web 2.0 applications like *Facebook,* and IM clients (even those built around a room metaphor such as *IMVU*) are not counted. Also not counted in this report are games with online modes and ranking systems such as *Microsoft's Xbox LIVE*, though *Sony's* "*Home*" for *PlayStation 3* users may fall into the virtual world category. This report also excludes online games like *Kingdom of Loathing* and *Massively Multiplayer Pong* as they fail the definition above.

Classification

Some reports make a separation between virtual worlds and MMORPG's (Massively Multiplayer Online Role-Playing Games – MMORPG's or MMO's for short). This report does not use that distinction; rather it adopts the following classification.

Virtual worlds can be of the following types:

- Game worlds: *World of Warcraft, EvE Online, Lord of the Rings Online, EverQuest*
- Social worlds: *Second Life, Habbo Hotel, Virtual MTV, Club Penguin*
- World-building tools: *Multiverse, Project Darkstar, OLIVE*

While education and training may be seen as missing categories in this classification, they are intentionally excluded as they are actually a way of using either world building tools or existing social worlds.

Users treat each type of virtual world very differently, setting up important implications for policy. For example, an educational virtual world set up as a game world would make different demands on the legal system than one set up as a social world.

Similarly, so-called 'mirror worlds' - those that mirror the physical world in some way e.g. *Metaversum's Twinity* - are seen as just one type of the existing categories because mirror worlds can be games, social spaces or tools.

What virtual worlds look like

Typically, virtual worlds today are 3D environments where users can position their view at any angle.

Second Life[ii]

World of Warcraft[iii]

Virtual worlds developed a number of years ago - and many contemporary ones targeting the youth market - use what is known as a "2.5 D" or "isometric" view, where the user's point of view remains at a fixed angle. These worlds also tend to use a much simpler graphical style.

Habbo Hotel[iv]

Club Penguin[v]

3. Who uses virtual worlds?

Virtual worlds are used by people from every demographic around the globe. Game worlds are generally more popular than social worlds and have become a thriving part of the culture in some East Asian countries like South Korea. User demographics in specific virtual worlds can vary widely, but there are a few marked trends. This section features a summary of information expanded on later in the **Statistics** section of this report.

Game Worlds :	In the West, the average age of game world players is 26, although the range is huge – from pre-teens to seniors. The majority of players are male[vi]. Registered users of individual game worlds can reach into the tens of millions, especially in South Korea and China.
Social Worlds:	Both *Second Life* and *There.com* have a roughly 50:50 split between male and female users[vii]. The peak age range for *Second Life* is the 24-35 group, but they employ a separate space for users under 18. The average age of *There.com* users is lower, but they are a single 'PG' safe space. Registered users of social worlds targeted at an adult or broad age range tend to be in the hundreds of thousands or several million. These figures are dwarfed by kids' virtual worlds (see below).
Social Worlds for Kids:	*Habbo Hotel* users range from roughly 8 years old to 15, while the average user of a world such as *Whyville* (with a registration base of more than 2 million) is a 12 year-old female. Worlds such as *Club Penguin* and *Webkinz* tend to be at the lower end of this spectrum and even reach children as young as 5 or 6 (together with their guardians / parents and grandparents).

Kids' virtual worlds (games and social) are currently the largest part of the virtual world market with *Habbo Hotel* having around 100 million registered users (note: definitions of user numbers are explained later in this report) and *Stardoll* being the number one online destination in the UK for under 12s.

Brands

As the popularity of virtual worlds has increased, so has their commercialisation in varying ways. In game worlds there have been several approaches to the integration of brand advertising - the issue being that brands should not interfere with the world fiction. For example, *Anarchy Online* used in-world advertising, but *Anarchy Online* was a Science Fiction genre game where 'real world' brands would not be out of place. Some media brands have also extended fully into the game world space, examples here include: *Lord of the Rings Online*, *The Matrix Online*, *Star Wars Galaxies, Age of Conan – Hyborian Adventures* and the soon to be released *Marvel Universe* (*Star Trek, Firefly, Stargate* and other media brands are also said to be in development). Here there is an argument that being 'in brand or the world can be a richer experience for the fan than consuming traditional media.

In social worlds there tends to be no overall fiction, hence there is no apparent barrier to the inclusion of brands. However there have been examples of community resistance to branding e.g. disquiet over Levis and Nike in *There.com* and protests over McDonalds in *The Sims Online*. Currently the dominant model is the custom-branded virtual world, particularly for those aimed at kids. The current examples such as *vMTV* and *Webkins* are being joined by a host of brands such as Barbie and Hello Kitty. The commercial argument behind such world is that rather than being exposed to a brand for seconds (with an advertisement) or maybe minutes, with a branded world users are exposed the brand for hours, possibly every day.

As virtual worlds grow they are them selves becoming brands and expanding into retail areas such as merchandising (see business models for more information)

Education, Training and Learning

In tandem with the rise in popularity of virtual worlds for game and social purposes, there has been a rise in their use for education, training and learning. Examples span all virtual world types.

Forterra Systems uses *OLIVE* - a virtual world platform based originally on the same code as *There.com* - and is a market leader in the area of virtual simulation for military, medical and other sector training.

A large number of universities and other educational intuitions now have a presence and run classes within *Second Life*. It is worth noting that many of these classes have nothing to do with *Second Life* itself or any other virtual world or technology, they merely use the virtual space a medium for providing content and inspiring learning.

Schools and organizations such as *Global Kids* use *Teen Second Life* and other spaces for a range of education projects aimed at children. In addition, there are specific programs such as the UK Government FRANK drugs awareness campaign, which has a presence in the form of a 'bus' in *Habbo Hotel UK*. Also, a small number of worlds, most notably *Whyville*, are embedding learning within the fabric of the virtual space.

It is worth noting that in the previous discussion, 'teaching' and 'learning' are seen as separate uses. This distinction is drawn because one of the distinguishing factors often cited as a benefit of virtual worlds is that they act as catalysts to individual learning.

Corporate

Companies such as IBM are promoting the use of virtual worlds as corporate spaces. In addition to training virtual worlds are being seen as place where the widely distributed knowledge workers of today can meet in virtually enhanced teleconferences or corporate events. Virtual worlds are though to bring back elements of the social that are being lost through increased home working and globally distributed organizations.

4. What types of virtual world are there?

This report splits virtual worlds into three types: game, social and tools. This section looks in detail at each of these types of virtual world.

Game and social worlds have a history going back to 1978 when the first virtual world called *MUD* (at the time a text-only world) was developed in the UK by Bartle and Trubshaw.

Game Worlds

Game worlds such as, *EvE*, *EverQuest, Final Fantasy, Lineage, Lord of the Rings, Maple Story, World of Warcraft*, and hundreds of others are virtual spaces created for the purpose of gameplay. While game worlds have been around for nearly 30 years, and growing in size steadily it is over the last 5 years that they have seen an increase in media attention and a more rapid growth in popularity with *Blizzard*'s *World of Warcraft* reporting around 10 million subscribers and Asian games such *Maple Story* reporting up to 40 million registered avatars.

Common structure

Game worlds tend to have a common underlying structure, with puzzles and challenges similar to other video games. Players' characters (represented in game by an 'avatar') progress up through a level system of some form where higher levels give them more power in the context of the game. Typically, avatars will have characteristics such as: race (e.g. elf); a type or class (e.g. warrior or mage); skills (e.g. armour making or alchemy) and a level (often ranging from 1 to 60 or 70). Players generally take several months to reach these higher levels and then retain their game accounts for a number of years.

Activity within game worlds is often centred on quests. These are in-game tasks that typically involve travelling across the virtual world and defeating a foe, solving a challenge or delivering something. For competing a challenge players are usually rewarded with experience (known as xp (experience points), accumulating xp is what increases a character's level) and virtual items and / or currency. As players progress up the levels, these quests get ever more complex and often require large groups working together in real-time. The so-called end-game of *World of Warcraft* involves quests requiring up to 40 people and a week of regular, highly coordinated effort.

Many game worlds also allow players to fight against each other in so-called PVP (player vs player (as opposed to PVE player vs environments)). In some games this is at a large scale enabling large groups of players to battle against each other. *EvE Online* is different form most game worlds in that it has no levels as such and few game rules, but from this a highly complex large scale system of war has emerged typified by battles between player groups that can number in the hundreds, preparation for which may take months.

Social complexity

The technical and social complexity of this aspect of virtual worlds often eludes non-players, who tend to see just a screen that looks like any other video game. To appreciate what is going on, imagine trying to organize an online event where at least 40 people must attend simultaneously in order to complete a complex task requiring a high degree of specialisation and co-ordinated action, yet the leader has no direct management control over any individual. Moreover, team members may be spread across multiple time zones and have personal or sub-group political agendas. What's more the group leader's day job may be working on a cash register.

In conjunction with event-based organizations, players of game worlds form 'guilds' (often given other terms such as 'corporations' in *EvE* Online or Blood Pledge in *Lineage*.) Guilds can be large organizations with hundreds of members based all over the real world. So-called über-guilds now span many games and a number have attracted sponsorship deals. For many people, being part of a guild is integral to their enjoyment of the game. Indeed, guild duties can become more important than playing the game itself. Guilds typically have websites and mark their achievements with photos and stories.

Indie-games

While, in the main, commercially successful game worlds follow the men-in-tights quest formula, the game world market is much like that of film, with both blockbusters and indie productions. *World of Warcraft* is by far a blockbuster, while something like *A Tale in the Desert* (ATITD) is more of an indie as an MMO that replaces combat with community building, art, flower breeding and marriage. It is largely developed and maintained by two people and sustains a community of around 2,000 users. Yet another variation on the model is the so-called Massively Casual Multiplayer Game, which combines casual mini-games with an overall game structure, *Three Rings* is a pioneer of this type of game with titles such as *Puzzle Pirates* and *Bang! Howdy*.

Due to the relatively low cost of production there is also a thriving community of text world creators and users. In fact there are far more txt worlds that graphical ones though there is a smaller player base. Iron Realms Entertainment, for instance, runs a number of commercial txt games such as *Achaea*.

Social Worlds

Technically, social worlds share the same surface characteristics as game worlds. They are 2.5D or 3D persistent environments with avatars and real-time communication. However, social worlds have no overarching game built into the structure of the world. They may have a lot of playful aspects and sometimes mini-games within them, but avatars tend not to have characteristics such as classes or character levels.

Social worlds can be thought of as chat rooms or discussion groups with space, though the world-like and permanent nature of social worlds means that a much more complex community develops around them than one sees on message based systems such as Instant Messenger.

Activity in social worlds tends to centre on events, fashion and interpersonal relationships. Events may be generated by the word publisher or user-created such as parties where music might be streamed live by a DJ. Fashion extends to all aspects of the world, particularly rooms (in 2.5D spaces) or houses (in 3D ones) and avatar appearance and clothing. The rapid turnover of fashion is one of the key drivers behind the economy of social worlds. Using micro-transactions, this sustains both virtual world publishers and, in spaces such as *Second Life*, businesses based on user-created content. Given the almost instantaneous transfer of goods and the trivial sum-per-transaction, the turnover of fashions in virtual spaces can be bewilderingly fast. Social-world users also spend a great deal of time nurturing friendships and negotiating personal politics, including cybersex.

Unlike game worlds, social worlds tend not to have structures such as guilds. However, many social worlds support a range of grouping tools allowing users to talk with groups of friends using in-world instant messenger.

World building tools

The increase in popularity of virtual worlds has given rise to a market for world-building tools. These technologies allow a wider variety of companies and individuals to create their own virtual worlds. Some toolkits like Sun's *Project Dark Star* provide the fundamental technical libraries to build virtual worlds such as *There.com*'s Mekana Technologies which then go on to customise a version of their virtual world for specific customers such as MTV. Between these two extremes is a range of platforms that give professionals, hobbyists, academics and those interested in training and education a jump-start in world creation. Such platforms include *Multiverse*, *BigWorld* and *Hero Engine*.

Other

As with any taxonomy there are things that fall outside it. One set of virtual worlds that are hard to categorize in the terms above are 'adult' virtual worlds - that is, virtual worlds targeted at direct or indirect sexual gratification. Such a set would include worlds such as: *Sociolotron* a game world with a strong emphasis on various forms of sexual fetish; and *Red Light Centre* a world centred on pornography, cybersex and dating. There are also a number of worlds based on the 'furry' subculture - which includes, though is not exclusively, a sexual (sub)-subculture.

5. Business Models

Consumer virtual world business models need to be split into two groups – business models used by the world publishers and emerging business models developed by (and sometimes for) virtual world users. The world building tool business is based on either serving the booming consumer world or targeted directly at training, education and now business.

Virtual World Publisher business models

Revenues of virtual world publishers range from the negative, for hobbyist worlds, to the hundreds of millions of USD per annum. For example Korea's *Nexon* reported[viii] 2005 revenues of $230 million (primarily generated from micro-transactions).

The trend for virtual world publishers, especially the larger ones, is to utilise multiple business models and a broad range of payment methods – *Sulake,* publishers of *Habbo Hotel,* quote well over 100 payment methods globally and employ a number of models in addition to their core micro-transaction (see below) based model.

Subscription

One of the most common business models, especially for Western game worlds, is the subscription fee model. Here, users of the virtual world pay a subscription on a monthly basis (or for longer periods which attract modest discounts). Subscriptions are typically around the $10 - $15 (*World of Warcraft*, *Lord of the Rings Online*) level for virtual worlds targeted at adults and $2- 47 (*Habbo Hotel*, *Club Penguin*) for those targeted at children. Subscriptions are generally taken by credit card; hence, publishers hold payment and other details on file.

An alternative form of subscription model is the game card. This is similar the mobile phone industry's pay as you go model. Like the subscription model it is effectively paying for time, but unlike the subscription model it requires a lower level of commitment and can be used by people who do not have access to credit cards.

Free-to-use

The other most common base business model is "free-to-use" i.e. payment is indirect. Typically this model is mixed with one that requires payment to access some form of higher-value content – either through subscription-based membership (*Habbo Hotel*) or the purchase of virtual artefacts through micro-payments (*Habbo Hotel*, *Seafight*). Alternatively, the publisher may generate revenue via advertising (*Anarchy Online*); by being brand based (*MTV Online*), or at the hobby level might run a virtual world simply because they find it rewarding.

Box / Expansion-Pack Sales

Graphically rich virtual worlds tend to be based on client/server technology. The client software is often sold as a retail product or a paid-for software download. These can cost between $20 and around $40. This revenue stream generally complements a subscription model, though in a few cases such as *NCSoft's Guild Wars*, there is no subscription. The box sale model is commonly extended in two ways - first through 'expansion packs' which extend the virtual world in some way, second through special edition retail product which generally includes other merchandising.

Merchandising, brand extension & licensing

More popular virtual worlds have started to extend their product rages outside the virtual and beyond retail software. One example of brand extension and licensing is *Blizzard's World of Warcraft* which has a range of licensed branded products such as books on how to play the game, t-shirts, stickers, card games etc. In addition they have done co-promotion with *Coke* in China and *Toyota* in the US.

Another model is that exemplified by *Ganz*'s *Webkinz,* a virtual world where children look after virtual pets. *Webkinz* model is based on people owning both physical 'plush' (around £10) and online versions of their 'pet'. *Webkinz* also has a range of trading cards.

Mobile

Mobile is being used both as a payment mechanism by virtual worlds, and increasingly being looked at as a platform extension or a platform in its own right. *Sulake* have recently released *Mini Friday* as a test / cut-down version of their online world *Habbo Hotel*; and open source developers working with *Linden Lab*'s *Second Life* source code have created a number of mobile views. The rise of browser-based worlds is likely to hreald an increase in the use of mobile as a platform and it is probable that value-added extensions to virtual worlds such as who's online, statistics, etc. will become the norm.

Item & currency sales - micro payment model

Many virtual worlds, especially those targeted at children, appeal to the fashion aspect of user activity and generate revenue through the sale of digital artefacts with which people decorate their avatar or virtual spaces. These artefacts are sold at a low price – often less than $1. Virtual world creators maintain a constant supply of items and create unique items such as limited-edition Christmas trees and Halloween hats, thus maintaining on-going revenues.

The publishers typically offer a wide variety of payment options such as paypal, mobile phone, premium phone lines etc. In part, this allows access to the non-credit card holding market i.e. children. While individual payments might be small, the size of the user base and the frequency of purchases make this a successful and expanding business model. While this model is highly successful in Asia, there is some resistance to it's application to game-worlds in the West where purchasing game items can be seen as a way of buying success, in social and kids worlds though the practice is now standard.

Character / item services

Many game worlds split their users into a number of separate, but largely identical servers (known as shards or realms). Typically, users cannot move a character from one server to another on their own and may find themselves separated from their friends or guild. As building up a character can take a great deal of effort, players are often willing to pay a fee (*World of Warcraft* charges $25) to transfer it to a new server.

Modifying characters in other ways, such as levelling, character ownership transfer and item brokering are unusual services for game world publishers to provide, but *Sony Online Entertainment* (SOE) is one of the few big publishers moving into this area with their *Station Exchange* brokering service. These kinds of services are usually offered only by third parties in contradiction to the terms of service for the game.

Events

In-world events are a mainstay of virtual world social activity. These range from parties through to weddings and funerals. A number of virtual world providers have event teams who support and / or stage such events. Examples of this include SOE's *Star Wars Galaxies* who would create Rebel or Imperial wedding events including things such as Storm Trooper honour guards – although this type of event formed part of the overall fabric of the virtual world and was not a revenue-generating stream in and of itself. Whereas *Makena Technologies*, the company that runs *There.com*, stages regular events for clients such as *CosmoGIRL!* within the *There.com* world (this is in addition to the work done within specific branded worlds (see below)).

World building business models

Virtual space / land / serious games

Some virtual worlds employ a range of models based on the principle of selling virtual space and / or 'white label' versions of their virtual world platform.

One of *Linden Lab's* (*Second Life*) primary sources of revenue is 'land sales'. That is, areas of Second Life are sold to businesses or individuals. Currently an 'island' costs US$1,675 up-front and US$295 per month for 'maintenance'. *Makena Technologies* (*There.com*) also sells virtual space. However, in their case this is a separate virtual world based on the *There.com* platform. The main example of this would be those spaces created for MTV[ix]. *Sulake* did a similar deal with *Disney* in the creation of *Virtual Magic Kingdom*.

There is also an expanding market in the use of virtual world technologies for training, as exemplified by companies such as *Forterra Systems*, a spin-off from the original *There.com* company. *Forterra* have focused on catering to military, medical and other simulation-based training environments.

Virtual World User business models

A common feature of virtual worlds is an emergent economy connecting virtual world to physical world currencies. Often this economy is generated by the two extremes of user types – those who are cash poor but time rich, and those who are time poor but cash rich. Add to this the fact that many elements of virtual worlds require a great deal of time to achieve, then the emergence of an economy becomes almost inevitable.

Game worlds

Gold Farming - Currency, Items & characters

The primary user-driven business in game worlds is the selling of in-world currency, items or characters / accounts. This business is known as gold farming: "gold", because that's the unit of currency of *Ultima Online* (where this practice first came to prominence) and "farming" because the activity has become industrialised through the use of cheap labour and automation. Groups engaged in the practice are sometimes known as Chinese Gold Farmers, but it is certainly not the case that all these businesses are run out of China. However, labour cost arbitrage is a favoured basis of this type of business model due to the essentially negligible cost of the movement of goods.

The practice of gold farming is controversial for a number of reasons:

- It often breaks the terms of the contract users have with the virtual world provider.
- It leads to in-world inflation (sometimes termed mudflation).
- Gold farmers tend to use the game rather than 'play' it, engaging in unpopular activities such as 'camping' where they monopolise an area, preventing players from using it.
- Many players see the use of farmed gold as cheating.

The arguments for this practice are:

- Any player should be able to do what they want with the currency and items they generate in the game as it is value created from their 'labour'.
- The EULA fails to recognize player rights.
- Many parts of the game are not sufficiently interesting, hence game makers have generated the practice by putting interesting content only at the start and end of the game.
- Players with multiple characters claim that as they have done the 'grind' of lower levels once they should not have to do it again and again.

Power levelling

A variation on the Gold Farming model is power levelling. Instead of buying a pre-created character, a user will give their password to a 3rd party (often refer to as "giving someone the keys") to play the character up to a higher level for them. This is also controversial for many of the reasons noted above.

Pay-to-raid

Another, though less common, variation on the above is hiring people to play as a group in a complex part of the game. As with other business models, this is motivated by players wanting to achieve certain goals. Specifically certain items bind to a character when then are 'picked up' hence cannot be transferred / sold between player. There may only be one of these at the end of a 40 person raid, which means that 39 people do not get it, yet have played for hours. A raid for hire will enable a player to gain such items which are often highly prized.

Brokering

A slightly different model is the trusted third party or broker model. This arises out of the number of scams that exist in item trading. For example one player may offer gold for sale, a second player might transfer money to that player who then simply does not deliver the gold. Alternatively a player may receive the goods but then issue a 'charge back' to return their funds. In this business model, both parties place their part of the deal in the hands of a trusted third party who ensures the exchange is what was expected and transfers the assets for a percentage of the deal.

Social worlds

Social worlds do not have the same built-in level structure as game worlds, and so avoid some of the controversial businesses /cheating related issues mentioned above. However, those worlds allowing in-world creation have generated a whole set of skills that effectively mirror physical world ones. Hence, in *Second Life* a range of businesses from coding and design through to advertising and marketing have emerged. What's more, the divide between virtual and physical is dissolving, as marketing specialists look to *Second Life* as simply another medium in which to interact with customers.

So with virtual worlds like *Second Life* it may be better to think of how any standard business model might be adapted to the medium, rather than asking what business models exist within it. Notably, there are a few agencies emerging as specialists in virtual worlds. These companies tend to work with existing brand holders to develop some form of business within one or more virtual worlds. The three most prominent businesses of this type are: *The Electric Sheep Company*[x], *Millions of Us*[xi] *and Rivers Run Red*[xii].

Sex

As with many emerging technologies, sex has been one of the primary drivers of *Second Life*. It has been claimed[xiii] (though this figure is disputed) that up to one third of Second Life's economy is based on some form or derivate of the commercialisation of sex – from cyber-prostitution and clubs to in-world body parts and animations.

In short, if something can be found in the real world, it can also be found in social virtual worlds and often game worlds, sometimes heightened in fantastical ways, but still grounded in existing economic and social principles.

Amateur-to-Amateur

Virtual worlds act as catalysts for so-called gift economies – that is, structures where creators give things to individuals or the community for no direct, or even sometimes indirect, reward. Such structures, also known as Amateur-to-Amateur (A2A), can be very similar and indeed an extension of the OpenSource community model.

Interface Mods

A number of virtual worlds leave elements of their application open to modification (modding) by users. This facilitates a community of 'Modders' around the game. *World of Warcraft* is an example of this. Users can modify the *World of Warcraft* user interface and this has resulted in thousand of "mods" to do everything from help with maps to track game statistics. So established is this culture that some guilds require players to use particular mods, and over time popular mods are often made part of the core interface by the virtual world publisher.

FAQs / Help / Mod Sites

A common aspect of computer game culture is the online guide to how to play a game. These guides are often in the form of 'walkthroughs', Tips 'n tricks etc. The advent of *YouTube* has seen the rise of the video guide to add to the range of online help. This culture also exists in the virtual world space. Given the size of virtual worlds there has been a rise in the use of databases e.g. *Thottbot* [xiv]for *World of Warcra*ft.

Here we also see a merging with commercial culture. Sites such as *Alakazam*[xv] and *curse*[xvi], host free-to-use player generated which drives traffic eventually resulting in advertising revenues.

Machinima

As mentioned above, recording of in-world movies is a growing aspect of computer game and virtual world culture. Creating films within a video game or virtual world is called Machinima (Machine-Cinema [xvii]). This is a growing culture in its own right, including videos used as part of help guilds, short comedy sketches, music videos (often involving dancing), and highly complex movies.

6. Statistics: Lies, Damn Lies & Registered Users

There are no broadly agreed upon metrics for virtual world use. Nor are their any recognized independent bodies that audit figures as is common in industries such as publishing. What's more, the range of business models (see above) used by virtual worlds means it is not possible to compare some figures against others. This causes wide confusion both for advertisers and policy-makers as it is unclear how many people are actively using virtual worlds, hence what their impacts are.

At the next level of detail, even accurate numbers often do not give a good indication of how active a virtual world will feel. This is because some spaces like *EvE Online* and *Second Life* are single spaces where any user can see all other users on-line at the same time, whereas *World of Warcraft* is split into servers, so the activity-level of the world is dependent on the population density of any given server. Finally, some virtual worlds, such as those targeted at children, often operate opening hours (either through internal policy or due to local regulation).

Registered users

The figure most often cited by non-subscription virtual worlds is that of Registered Users. The reason this figure is often quoted is that it tends to be both the easiest to calculate and the highest. Its usefulness however is questionable.

Registered Users typically means the number of people that have signed up to a virtual world via their web site and / or downloaded client software and / or create an avatar. Registered Users tends to be a cumulative count over the lifetime of the virtual world hence the figure will go up over time, even if the actual popularity of the world reducing. A registration also represents a minimal commitment to the virtual world and not necessarily the use of that world, and there can be multiple registrations per individual. Lastly from a commercial point of view registered users may have little or no relation to the profitability of the virtual world as a business.

Subscriptions

Subscribers or Subscriptions typically means the number of users that are paying to use a service. Sometimes the figure is conflated with Registered Users (see above).

While subscriptions tend to be one accurate representation of a revenue source for a virtual world, they might not be an accurate representation of the use of the space since the number of concurrent users or average users over any single month may be significantly lower. Alternatively, the virtual world may have a mixed business model where the majority of users are non-subscribers – for a brand looking to utilise that world the figure of ‘eyeballs' may be more significant. Having said this, as Subscriptions indicates at least a minimal commitment to a given virtual world, this figure tends to be a more accurate reflection of how active the world is. Commercially subscription numbers give and indication of the top line revenue of a virtual world business.

Concurrent Users

Concurrent Users is a measure of the number of users logged in to a virtual world at any given time. Typically the figure is quoted as a maximum, or maximum over a given period. Some virtual worlds, such as *Habbo Hotel* and *Second Life* give the Concurrent Users at any given time by displaying it on the log-in screen.

Concurrent Users typically provides a fairly accurate representation of how active a virtual world is, though given the range of business models it might not provide any indication of the financial status of the virtual world.

Unique Users

Unique Users typically means the number of unique accounts that have logged into a virtual world over a given period. Those worlds that quote this figure typically use 30-day or one-month periods, though some use other periods such as 90 days. Notwithstanding the range of business models and other variables noted above, Unique Users tends to be a good measure of the activity of a virtual world as the period smoothes the Concurrent User figure often quoted.

Unique Users also has the advantage that it is similar to the Unique Users Per Month often quoted by web sites. However, it must be noted that the session time on a web site might typically be in the order of minutes – with brand exposure often being lower than this, virtual world users are typically in a virtual world for tens of hours per-week.

Active Users

The notion of Active Users is one that has generated much debate in the industry. The question is – what metric is a fair representation of being a notionally active user of a virtual world? This is difficult to judge as there is no general agreement of what constitutes "active" within a given space let alone across different types of virtual world.

Sample Statistics

The table below contains a range of figures quoted by companies. As can be seen, Registered Users is a popular figure but by all means not the only one quoted by current virtual world publishers. As the table also demonstrates companies are inconsistent in the statistics that they quote publicly.

Virtual World	Registered Users	Subscriptions	Concurrent Users	Users Per Month
A Tale in the Desert		2k		
Club Penguin	12 Million	700K		
Habbo Hotel	100 Million+		6k (UK only)	
Maple Story	60 Million+			
Second Life	10 Million		50k+	800k
Stardoll	15 Million		50k+	
There.com	1.5 Million			
Whyville	3 Million			
World of Warcraft	-	12 Million+		

7. What The Future Holds

The number of people using virtual worlds keeps expanding. As one virtual world closes, another seems to take its place, setting new benchmarks in terms of size and revenue. Comparing virtual worlds with social networking sites, it looks as if we will see yet more expansion in their adoption.

A lifetime of virtual world usage

For digital natives there are now clear paths for lifetime involvement in virtual worlds. Starting at 5 or 6 with *Club Penguin* or *Webkinz*, progressing through *Habbo Hotel* or *Stardoll*, through *Teen Second Life* and onto *World of Warcraft*, *Age of Conan, HiPiHi, There* or *Second Life*. Moreover, large virtual world publishers such as *Blizzard* look set to release a patch a year and Linden Lab, creators of *Second Life*, have what might be termed a lifestyle model such that in both cases one could see individuals using accounts for the majority of their lives. An emerging model my be 'silver worlds' that is worlds that a designed for 60+ users to cater for the gamer generation as it ages.

Virtual worlds everywhere

Virtual worlds are set to become ever more pervasive. Worlds such as *Gaia* blur the distinction between social network and virtual world. Projects such as *Metaplace* by *Areae* and *Whirled* by *Three Rings Design* (both in Beta at the time of writing) provide very 'thin' virtual spaces that, in the case of *Metaplace*, can easily be embedded in existing web sites. Both of these products also give users simple to use tools to create their own personal virtual spaces suggesting that we might see an expansion of the personal world as an extension of the personal web site and blog. Further, with mobile experiments such as Sulake's *First Friday* and the promise of augmented reality applications such as those demonstrated by Intel and applications that mix *Google Earth* and *SketchUp,* completely pervasive virtual spaces may soon intertwine our online and off-line worlds.

Where next?

Virtual worlds have been with us for almost 30 years, though for many they still seem new. As with any emerging technology their development is hard to plot as it relies on a mixture of social, political and technical factors. The current trajectories suggest that like the web, virtual worlds are set to become an increasing part of people's entertainment, social and civic lives in ways, both prosaic and astounding, that we cannot yet predict.

Appendix – A virtual worlds list

This list is just a sample of the many may virtual worlds currently available.

A Tale in the Desert - www.atitd.com

Achaea - www.achaea.com

Active Worlds - www.activeworlds.com

Bang Howdy - www.banghowdy.com

City of Heroes - www.cityofheroes.com

City of Villains - www.cityofvillains.com

Club Penguin - www.clubpenguin.com

Counter-Strike Online - www.counter-strike.com

Dark Age of Camelot - www.darkageofcamelot.com

Dark Ages - www.darkages.com

Dubit - www.dubitchat.com

EVE - www.eve-online.com

EverQuest - everquest.station.sony.com

EverQuest II - everquest2.station.sony.com

Final Fantasy XI - www.playonline.com/ff11us/

Furcadia - www.furcadia.com

Gaia online - www.gaiaonline.com

Habbo Hotel - www.habbo.com

Kaneva - www.kaneva.com

KartRider - kart.nexon.net

Kingdom of the Winds - www.nexustk.com

LambdaMOO - www.lambdamoo.info

Legend of Mir - www.legendofmir.net

Lineage - www.lineage.com

Lineage II - www.lineage2.com

Mabinogi - mabinogi.nexon.net

MapleStory - www.maplestory.com

Matrix Online - thematrixonline.station.sony.com

Meridian 59 - meridian59.neardeathstudios.com

MUD - www.british-legends.com

MUD2 - www.mud2.com

MU Online - globalmuonline.gamersfirst.com

Multiverse - www.multiverse.net

Neopets - www.neopets.com

Neverwinter Nights - nwn.bioware.com

Play.net - www.play.net

Project Darkstar - www.projectdarkstar.com

Project Entropia - www.entropiauniverse.com

Project Outback - www.yoick.com/outback/

Runescape - www.runescape.com

Second Life - www.secondlife.com

Seed - www.seedthegame.com

Shadowbane - www.shadowbane.com

Skotos - www.skotos.net

Stardoll – www.stardoll.com

Star Wars Galaxies - starwarsgalaxies.station.sony.com

The Sims Online - thesimsonline.ea.com

There - www.there.com

ToonTown - play.toontown.com

Twinity - www.twinity.com

Ultima Online - www.uoherald.com

Vanguard - www.vanguard.com

Vzones - www.vzones.com

Whyville - www.whyville.net

World of Warcraft - www.worldofwarcraft.com

Yohoho! Puzzle Pirates - www.puzzlepirates.com

Appendix B - Notes & References

[i] Bartle, R., (2003), Designing Virtual Worlds, New Riders

[ii] Image copyright Linden Research Inc.

[iii] Image copyright Blizzard Entertainment Inc.

[iv] Image copyright Sulake Corporation Oy.

[v] Image copyright Disney.

[vi] http://www.nickyee.com/daedalus/archives/001470.php

[vii] http://www.kzero.co.uk/blog/?p=961

[viii] http://www.nexon.net/NX.aspx?PART=/Etc/About

[ix] http://www.vmtv.com

[x] http://www.electricsheepcompany.com

[xi] http://www.millionsofus.com

[xii] http://www.riversrunred.com

[xiii] http://nwn.blogs.com/nwn/2007/02/a_census_of_sec.html#comment-60068614

[xiv] http://thottbot.com/

[xv] http://www.allakhazam.com/ see also gam specific areas such as http://wow.allakhazam.com/

[xvi] http://www.curse.com/

[xvii] http://www.machinima.com/, http://www.machinima.org/

