Abstract

In this paper we describe an innovative mobile game in the form of a multi-authored book. Based upon the 1920s surrealist technique of “Exquisite Corpse”, the book builds from a series of standard text message length contributions with each author being given only the previous message on which to base their own contribution. Previous contributors are encouraged to spread the awareness of the book, and hence the number of participants, by forwarding a text message to produce a mobile viral distribution mechanism. The book has been designed as a mobile multiplayer game as it has, in common with the surrealist technique, its origins in the Victorian parlor game of ‘Consequences’, and as user feedback shows, it does demonstrate many game attributes. The book offers an interesting perspective into how massively multiplayer mobile games may be used, how they can be made appealing to the very broad mobile user demographic, and how the elusive phenomena of mobile viral distribution occurs in practice.

Categories and Subject Descriptors: J. Computer Applications, J.7 Computers in Other Systems-Consumer

General Terms: Design, Experimentation, Human Factors.

Keywords: Mobile, Multi-player, Games, Viral Distribution.

1. Introduction

Massively Multiplayer Mobile Games (MMMG) are generating considerable interest amongst both mobile operators, who no doubt wish to increase the data usage on their networks, and game developers seeking a new design challenge. However, the operational restrictions of the mobile environment and differences in user demographic, compared to traditional video games, means that the design of such games present considerable challenges for would-be developers.

In terms of the mobile environment, a number of design difficulties are apparent, such as:

- Connecting Players. Essentially, there are two basic models for multiplayer gaming: [1] either you control the game through a central server, and each player connects to that server, or you use some form of quasi peer to peer system such as Bluetooth. For MMMGs the server solution is the only real option due to the requirement to connect, often geographically remote, users.

- Latency. While latency on the internet is typically in the order of several hundred milliseconds, on General Packet Radio Service (GPRS) and Third Generation (3G) mobile networks this can be in the multiple seconds [2]. This latency would generally be intolerable for fast moving action games and therefore MMMGs tend to be turn based. Note: with improved Quality of Service (QoS) provision this is likely to improve, although it will be affected by the users’ tariff arrangements.

- Drop outs. As users will often be mobile, there is a likelihood that they will unexpectedly drop out of the game play either through loss of the channel (e.g. the vehicle a mobile user is traveling in goes through a tunnel) or the users cease play to attend to another event (e.g. users traveling on public transport arrive at their destination). The ability for a MMMG to handle drop outs gracefully is essential to allow remaining players to continue the game.

- Platform. The mobile gaming market is fragmented. There are a multitude of different hardware and software platforms onto which a mobile game framework could be implemented [3] (e.g., Java, Windows Mobile, BREW, Symbian, etc) in addition to different bearer networks (e.g., GSM, CDMA, 3G, etc), each providing differing levels of Quality of Service (QoS). Creating a design to meet all of these criteria is often extremely challenging, although there are efforts underway to create an industry wide standard for mobile portability and interoperability [4]. This standardization specifically targets metering (costing), connectivity, session management, score and competition management, and logging.

In relation to the demographic of mobile users playing games, Glu Mobile’s recent UK survey showed that the classic image of the gamer being an 18-35 year old male is incorrect. In fact the main demographic is much more varied as 16% of all phone users have played games on their phone, and this rises to 29% in the 16-24...
age group, and just as many women as men play games on their mobile phones. In terms of ethnicity, where console gamers have traditionally been white, a report by NPD group on US mobile gamers indicate that they are twice as likely to be African-American, Hispanic or Asian. Although the demographic of mobile gamers is different to that of console gamers, they are often simply divided into the two traditional broad categories used by the games industry, that of casual gamer and hardcore gamer [5]. Whilst many in the console games industry have fairly well established techniques for targeting the hardcore gamer, the casual gamer has proved more elusive and success stories in this area, such as The Sims by EA Games, have often proved a surprise. It is worthwhile considering the popular profiles of hardcore and casual gamers [6] as they are no doubt influencing industry expectations about the mobile gamer.

**Hardcore Gamer:**

- Purchase and play many games;
- Enjoy longer play sessions and regularly play games for long periods;
- Excited by the challenge presented in the game;
- Will tolerate high levels of dimensionality in the user interface and often enjoy mastering the complexity;
- Often play games as a lifestyle preference or priority;

**Casual Gamers:**

- Buy fewer games; buy popular games, or play games recommended to them;
- Enjoy shorter play sessions – play in short bursts;
- Prefer having fun, or immersing themselves in an atmospheric experience;
- Generally require a low dimensionality of control (e.g. puzzle games);
- Consider game playing another time-passing entertainment like TV or films.

Whilst it is often considered within the games industry that casual gamers form the majority of mobile gamers [7] this is perhaps an over simplification and fails to take account of the nature in which people use mobile phones and the limitations of the devices. There is a strong argument that the game industry must establish new definitions specifically for mobile, indeed some in the industry are starting to address these concerns [8], but it is certainly an area where a lot more research needs to take place.

In our research to better understand the likely demographic for a MMMG, we studied some of the work from International Hobo on producing better game design [6]. Although this work was developed in relation to console gaming we felt that it highlights some of the gamer personality traits that could be utilized for mobile. They produced a classification for both hardcore and casual gamers based on clusters from the personality types of the Myers-Briggs Typology which is used to classify individual’s personalities. They called these types:

- “The Conqueror” is actively interested in winning and ‘beating the game’. In single-player games, completing the game generally counts as winning, while in multiplayer the goal is to beat the other players – either way, winning is the most important factor to these players.”
- “The Manager” is generally looking for a strategic or tactical challenge. They are interested in the mastery of the game – that is, the process oriented challenge of learning how to play well. Winning is to some extent meaningless to the Manager-type player if they have not earned it.”
- “The Wanderer” is a player in search of a fun experience. They won’t play a game they aren’t enjoying, and will in fact stop playing the moment it ceases to be fun.”
- “The Participants” are the largest group in the population. Very little is know about them except that they are often story-oriented and will generally only play games as a social experience. They wish to participate either in the story the game is offering, or participate with other players in some emotional context.”

International Hobo’s work indicates that the majority of game players actually fall into the class of wanderer, although the majority of the rest of the population are generally considered participants [6]. Therefore, we have not restricted our design simply to the hardcore or casual gamer, but rather wanderers and participants that we feel are likely to be most representative of the average phone user.

In the project presented in this paper we have explored a simple to use and easily understood game that:

- can be played in short bursts;
- avoids repetitiveness and has a strong element of fun;
- is story orientated;
- and provides a social experience.

The outcome is a novel mobile game called ‘thetxtbk’, which is based on the surrealistic technique of ‘Exquisite Corpses’ and the old Victorian parlour game of ‘Consequences’, and builds to produce a massively multi-authored book. The game is distributed through viral distribution (where the game is spread through personal recommendation) of either a Short Message Service (SMS) message or an email and will hopefully provide an insight into this desirable but elusive phenomena.

In section two we shall discuss the development of the game premise from the original game sources and provide a rationale for the design choices made. In section three we provide brief details of the technical implementation before concentrating on the evolution of the book and the user experience in section four. In section five we will draw our overall conclusions on this work and suggest possible extensions to the concept.

2. GAME PREMISE

Exquisite Corpse is a word game developed by surrealists in 1920s Paris which as a means of ‘discovering’ accidental poetry. It has its roots in the parlour game of Consequences which was
designed to be played by 5-9 players after dinner by Victorian ladies and gentlemen. Each person took a turn choosing a word for one of six questions and it was played by writing the words on paper then folding the paper, to hide the previous words, before passing it on to the next player. Typically these words were (in order):

1. Man's name;
2. Woman's name; (works best if these are people known to all those playing the game)
3. Place name;
4. A comment;
5. Another comment;
6. An outcome.

Then the story is read out by the players. One of the results from the first playing of the game was “Le cadaver exquis boira le vin nouveau” (The exquisite corpse will drink the new wine) which is how the technique got its name (www.exquisitecorpse.com).

An outcome.

Another comment;

Place name;

Woman's name; (works best if these are people known to all those playing the game)

In this project we build on the game premises previously outlined and have adapted them to produce a mobile game called ‘thetxtbk’, which is based around the standard SMS message length of 160 characters. Each player takes a turn writing a contribution to the book based upon them seeing only the last 160 characters entered. There are a number of reasons for basing the system on an SMS message:

- Firstly, although the system is based on Wireless Application Protocol (WAP), and the length of the message is entirely a design choice, we felt WAP still has a very negative image with consumers due to the disastrous launch on GSM. Statistics published by the UK’s Office of Communication (Ofcom) show that in 2004 only 1.6% of revenue generated by mobile operators came directly from data services. However, 15.4% of operator revenue was generated from text messaging (SMS) [9]. Over 85 million text messages are sent everyday in the UK alone (www.textit.com). SMS messaging is therefore incredibly popular and well understood.

- Secondly, allowing a short message, rather than an individual word, allows for greater creativity and increased sense of individual game play. Also, the need to control the type of word at each stage in the entry process is avoided.

- Thirdly, SMS messaging is often used to support social groupings and creating a community relationship is often seen as an important aspect of the success of multiplayer games.

There are, of course, differences between thetxtbk and what people would usually define as MMMGs. Firstly, the book evolves from a singular start point, with each user contributing to the narrative in chain-like fashion. The game environment is only accessible to a single user at any point in time and any particular entry is in someway the product of all previous entries and will influence all subsequent entries (the so-called butterfly effect). It is common to find in traditional massively multiplayer games that many of the players/characters in the game world have little influence on the overall state of the environment, with the social hierarchy often reflecting that of the real-world in that power, influence and wealth lies in the hands of a small minority. In thetxtbk, all authors have an equal say in the book’s evolution.

Generating revenue from a venture such as thetxtbk would probably be best achieved through selling advertising. In order to attain enough users to make thetxtbk profitable, without advertising the service itself, viral distribution is best means of propagation. Due to the nature of viral distribution, a message either rapidly spreads to a very large number of people, or fizzes out relatively quickly, reaching only small number of people. Viral distribution is powerful but very elusive and generally only achieved by:

- providing people with something that is very inexpensive (preferably free);
- provides a useful service or is of interest;
- is easy to distribute;
- and is something that people would like to share with their friends;

We are interested in observing how this phenomenon occurs in practice, in particular, the point at which a mobile distributed message achieves critical mass.

There is the further possibility that revenue could be generated by selling a book containing the complete story, with each entry credited to the contributing author, back to the community. By using the Publish On Demand (POD) model, this could present a viable low-risk strategy for generating income. With POD, books are only printed once they are ordered. This avoids the risk of publishing hundreds or thousands of books to reduce costs (economies of scale), only to find that there is no demand for the product.

Having defined the basic premise for the game, in the following section we shall discuss how the game has been implemented with an emphasis on the rationale behind the design choices made.

3. SYSTEM DESIGN AND OPERATION

The system developed to support the game consists of a central server database which holds both the entries in the book and names of the contributing authors as shown in Figure 1.
When a user accesses the website (www.thetxtbk.com), they are served content based upon the capability of the internet browser they are using. If the `HTTP_ACCEPT` request header of the browser indicates that it supports WML, then dynamically generated WML pages are served, otherwise the user is delivered XHTML content.

When submitting their first entry, authors are given a four character pass code. By entering this pass code, authors can submit subsequent entries under the same name.

To ensure that the system does not receive multiple entries based on the previous entry (resulting in a disjointed narrative), a locking mechanism is used. Once an author has chosen to make an entry to the book, they are given exclusive access to the next passage for up to ten minutes. The book is unlocked upon completion of the author's entry or after their ten minutes time slot has expired (whichever is sooner). If a prospective author tries to make an entry when the system is occupied (locked), the system informs them of the time remaining before access may be granted. Although this limits the number of contributions, we felt this was sufficient for the initial system, as we believe the large number of participants will build up over time rather than there being large numbers of simultaneous users at one time. However, if we do achieve large numbers of simultaneous users it would be a relatively simple process to alter the system to create multiple chapters and/or books.

To increase the numbers playing the game, and to gain some insight into the possibilities of viral distribution, we have utilized an SMS message which contains both an invitation to contribute to the book and the WAP link to the site as shown in Figure 2.

The exact cost of using thetxtbk for mobile authors is dependent on their network operator and tariff. Typically, a submission through WAP costs $0.04-$0.05 US using GPRS. The charge for forwarding the invitation SMS to others is generally no more than $0.14-$0.20 US per text (standard rate). No revenue is generated directly for thetxtbk from submissions.

We have added other elements to the game to increase both the sense of community and a competitive element for hardcore gamers. In particular the website, as shown in Figure 4, offers both the ability to make an entry and also gives larger snippets of the book to allow people to identify with the larger community of
authors. It is also possible to subscribe to an RSS feed associated with the book. This feed contains limited information on recent submissions and the feed is updated whenever a new entry is added to the book. The web site also contains a list of contributing players and the number of entries they have made. We felt that this was analogous to the high score tables which are often used to address the competitive desire of hardcore gamers, encouraging greater levels of participation in games. Although we have provided for entry via the web and have indicated in Figure 1 that awareness of the game can also be spread via email, we have not actively encouraged this, as our main focus is on mobile entry and mobile distribution.

- **Connecting Players.** By using a centralized web server, accessed using a standard protocol (WAP), thetxtbk allows mobile users from anywhere in the world to contribute.

- **Latency.** Any potential issues relating to network performance are avoided, as contributions to the book are turn based.

- **Drop outs.** Users do not connect simultaneously, and a drop out (such as losing GPRS signal) will not affect the status of the book, apart from making it inaccessible to any user for a maximum of 10 minutes.

- **Platform.** thetxtbk essentially avoids the issue of interoperability and portability by using what is already a common standard - WAP. Any phone supporting a WAP browser will also support thetxtbk.

4. **BOOK EVOLUTION AND USER EXPERIENCE**

The evolution of the book, which is at the heart of this game, provides some interesting insights into the way the players engage with the game. In this section we shall explore such interaction and the obvious place to start, as with all books, is the beginning.

For our opening we decided to play homage to the Philip K Dick classic, *Do Androids Dream of Electric Sheep?*, by altering the opening line of the novel’s hero Rick Deckard (who is listed as an author) to be in the first person past participle as shown.

"A merry little surge of electricity piped by automatic alarm from the mood organ beside the bed awakened me."

It is interesting to note that this first line is complete, which is something that turned out to be unusual in subsequent entries. The second entry, shown below, is indicative of the main feature that dominates the style of entries, in that the current author leaves the line open ended for the next author to follow. This would indicate that the contributors have a sense of community and that they are interested in developing the story. These are both attributes of participants. Note that for the purposes of this paper alternate entries are indicated by a switch to italics.

"I felt exhausted from the strange dreams that plagued my sleep. Who was eating my cheese, I wondered? Did I have mice? Or was there another reason I was a few crumbs short. It occurred to me that my obsession with cheese had to stop, before I began to hallucinate with desire."

The two passages that follow illustrate another common practice amongst the players, where the current author follows the story of the previous author but tries to create a humorous twist in the plot that often send it off in a completely new direction which is a trait indicative of the wanderer. This would suggest it’s a fun experience which is desirable from the expectation of
participants. Further, we can also see in the second of the two passages that the story is now progressing in the second person past participle. This switching generally occurs after the inclusion of a fairly random, even by the standards of this, entry which does occur every so often.

"a deep fried guinea pig that I had once enjoyed whilst trekking through deepest darkest Peru in search of a lost tribe who were reported to engage in acts so mundane, that they remained undiscovered for centuries - I didn’t find them. However, I did meet another tribe who engaged in acts so terrible that"

"," the Cornish comedian, was not so lucky. The oncoming implement smashed into his chest, impaling him to a near by bench that marked the spot of the first alien landing in Lancaster. The day they abducted Phil went down in history for the longest ever probing session. Eventually the aliens became despondent when he pointed out their futile business model. They started data harvesting"

One of the reasons for choosing a first person narrative was the fact that it would be almost impossible to maintain characters in the book. This is because as soon as their name is not included in the narrative of one entry, the players that follow this entry will then have no knowledge of the characters and they simply disappear. This is illustrated in the case of Dr Forbes in the passage below.

"although using moisturising cream would be taking things too far. Dr Forbes and I much prefer the natural feel of
sandpaper on skin and the soothing action it creates when rubbing into those hard to reach places. After an hour or so of extreme exfoliating dip the hard bits into some hot oil, add some chopped onions, tomato and fresh basil. Serve cold. "hmm, this tastes"

Interestingly this was not the last appearance of Dr Forbes and regular contributors who had come across him in the past often tried to resurrect him, although this is generally a short lived experience.

"the elusive Dr Forbes who seems to appear and disappear like a veritable will of the whisp. We were particularly surprised to see him here as he had vowed to stock tomato soup only on Saturdays and today was a Tuesday. 'Hey Forbesy', I whispered, 'Got any of your special, out the back?'. Forbes smiled and gestured toward the trap door leading to his cellar. "They're down there mate. Careful though, one of them nearly bit my arm off the other day". I began to walk toward the hatch when"

In terms of usage there are a number of interesting patterns emerging that are likely to be repeated on many mobile multiplayer games. For instance, as the graph in Figure 6 shows, the frequency of submissions is dependent on the time of day. Contributions are slow in the morning, although this picks up in the early evening. The busiest time for submissions is early and late evening and late at night which would suggest that a certain section of players only submit after all other tasks have been completed – and for the majority this is essentially just before going to bed. However, more submissions are required before we could confirm this hypothesis and at present these observations are more qualitative than quantitative.

Figure 6. Graph showing Entries to the Book based upon the Time of Day

Figure 7 shows the accumulation of entries since thetxtbk first opened. As the graph shows, interest was initially quite high, as those closely involved in the project were keen to try out the system. However, as the novelty faded entries began to level off. There does seem to be a resurgence of interest as a second wave of participants begin to submit, no doubt after the text message had escaped the confines of the initial group. We don’t yet believe we are at the point were viral distribution is evident as the graph should begin to show an exponential growth pattern and we will have to wait and see if this particular game does indeed go viral..
These patterns could well be used to influence system design. When mobile games first began to emerge, it was thought that users would generally only play when they had free time to spare outside the home and would not take time out to dedicate to mobile gaming, especially if they have access to richer gaming experiences. Our figures seems to agree with much anecdotal evidence emerging from the industry in that mobile games are often played at home on the couch and indeed that people aren’t playing the games when traveling home as was originally predicted by many in the games industry.

5. FUTURE ENHANCEMENTS
Because the textual contents of thetxtbk are provided solely by anonymous authors, there is the potential for abuse or misuse of the system. In order to minimize the amount of offensive or inappropriate content submitted to the book, a degree of moderation, filtering and/or editing will be necessary. The following steps could be taken to help implement this:

- **Automatic Filtering.** It is possible to filter/censor entries automatically by comparing the content of entries to a dictionary of blacklisted words or phrases. Of course, there are many creative means of getting offensive content to pass through any computer filter unmodified, so this can only be a partial solution.

- **Community Moderation.** Users who are reliable, trustworthy contributors to thetxtbk could be given limited rights to edit sections of the book. Given the scale with which viral distribution can spread, decentralising moderation by delegating responsibility to members within the community would be an legitimate step in order to cope with the rising numbers of contributors.

In order to achieve the number of users necessary to make thetxtbk profitable, we feel that it is necessary to allow more than one person to contribute to the story at any particular point in time. Otherwise, this limiting factor presents a major bottleneck. There are different means of enabling simultaneous access such as:

- **Dynamically Generated Chapters.** In this scenario the book is initially created with a single chapter that has a fixed capacity (e.g. 1000 words) and a new chapter is only spawned if, at any point in time, there are more users than chapters. A hypothetical scenario using this model might be as follows; the first author who accesses the site is given access to the lowest numbered chapter which has not yet been filled. If a second author tries to participate whilst the first author is still submitting, they are assigned the next lowest numbered chapter to contribute to. If this chapter does not yet exist, a new blank chapter is created. Once a chapter becomes filled, we would disable further contributions to it.

- **Chapter Selection.** In this scenario we initialize the book with a fixed number of chapters (e.g., twelve). Links are only provided to those chapters that are not in use. This gives the author more control over where they submit to. For example, if there is a particular chapter to which a user and their friends submit to regularly, they may like to continue contributing to it.

- **Buddy Books.** Maintaining a socially cohesive community when a large number of users become involved is difficult to achieve. A potential solution to this problem would be to allow sub-groups of users to create there own book with restricted access. This would also help to minimize problems concerning users submitting offensive or inappropriate content, as only permitted members, familiar to the other members, would be allowed to submit to the book. It would be at the discretion of the sub-group as a whole or the sub-group moderator/s as to whether all web users may be permitted to view their book.

6. CONCLUSIONS
In this paper we have attempted to create a profile of the requirements that a game would need to fulfill in order that it would be attractive to the majority of mobile gamers. To this end we drew inspiration from surreal list poets of the 1920’s to create a simple socially oriented story based game that can be played in short bursts and is capable of handling problems of latency and drop-outs (multiplatform).

Throughout the discussion in this research paper we have used Nokia as an example of the type of mobile games being developed. Although the game developed for this research project may lie outside any current definitions of game genres, and indeed many inside the games industry are likely to argue against it even being considered a game, we believe that there is substantial evidence of game experience and indeed it has many of attributes of a game play as the contributions show.

Whilst we would not consider we produced a definitive description of the attributes of the mobile gamer or indeed the magic formula for a successful mobile game, we have shown that there is a tremendous opportunity for developers to step outside the current gaming genres and create new, and uniquely mobile, game experience.

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8. REFERENCES


