Using smartphones and shared displays to connect and coordinate people in playful contexts

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Abstract

This paper explores the social aspects of a new kind of mobile games where players interact with each other in a shared physical space as well as in-game. As technology spreads throughout layers of culture and everyday life, and gaming becomes increasingly widespread, we see a future in social digital games through the use of smartphones, because of their prevalence and their technical versatility. This poses new challenges for designers. By using the context of music selection in semi-public to public situations and with the help of prototypes, we explore the problems of making selections and connections in large groups as well as delivering feedback. As a result of this project we arrive at elements such as participation, competition, scalability and the importance of social interactions between participants which can be used when designing systems in similar contexts.

Keywords: Design, interaction, connection, scalable, coordination, selection, public, event, social game, smartphone, transmedial access, mobile, mimetic interface, collaborative music listening, public spaces, convergence culture, third wave HCI.
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1 Introduction

Massive Entertainment - a Ubisoft studio - is developing a new game that utilizes smartphones when interacting with the game. This use of smartphones suggests that any number of people can join the same game provided that they have one. Creating situations where five or five hundred people can share the same experience is exciting new ground, and as such it poses new problems and questions for designers. In this project we will explore how a scalable number of people can share the same game experience in games that take place in public spaces in a playful setting.

The interest for this project for us lies within the field of social games in general and the experimental nature of this project in particular. Apart from an interest in IxD (Interaction design) and service design, Keisha also has a particular fondness for music and music-listening. For her, the main aim has been to explore the ways in which traditional socio-cultural activities in public spaces could be expanded and augmented by technology - and conversely; how technology and games are transcending across contexts of the everyday life of people. Jaffar has always been interested in the idea of “organic” multiplayer in games. Organic multiplayer systems that create opportunities for interaction between players in a more natural way than forcing players to go through menus to connect to each other or form groups. Some games are already exploring such features like Journey, Dark Souls and Guild Wars 2. Location based mobile games provide great opportunities to create these multiplayer moments.

Our approach builds upon the target group and context of the game that Massive Entertainment is developing in order to provide them with relevant work, while exploring one aspect of this game in an experimental way. We aim to make an academic contribution to the field of interaction design without the restrictions of confidentiality issues. We started by identifying trends in gaming, second screens and shared displays through the concept of cultural convergence, third wave HCI (Human-Computer Interaction) and transmedial access. This research served as a basis for establishing the context of our practical work and the methodologies used for that work; the context of public gatherings in social and playful settings. Through this work we explored expos, events, parties, clubs and the likes as examples of the aforementioned context. We examined previous work on collaborative music listening, participation and other motivational factors as well as interesting connection methods. This lead to the design phase, where prototypes enabled us to explore the problems and different possible solutions.
2 Background

2.1 Research area

A significant part of the gaming world is heading more and more towards transmedial accessibility. For console games, this means enabling players to continue their gameplay outside of the default indoor gaming environment. While console games typically offer considerable depth and persuasiveness, they limit their players to the physical confines of the living room. Breaking this physical bond (mainly accomplished through companion apps on mobiles these days) enables a game to continue in other areas of everyday life (Bardzell, et al. 2007). Conversely, mobile games are a casual activity which appeals to a wide audience, but they don’t really lend themselves to prolonged, extensive game play. Looking at mobile games, we can see that a majority of these games do not take advantage of location awareness technology but instead offer the same experience regardless of where you are. Location based mobile games on the other hand; take advantage of the player’s location to alter the experience. Location based mobile games, companion apps for mobiles and gaming on the go, which we will discuss in detail in this paper, all point towards that game play is transcending beyond the limits of the private space and heads towards the public space.

At the same time, casual games have made gaming more widely accepted, and there is also a growth in the general use of tech in public spaces both in the personal and the cultural sphere (Juul, 2010). With the social web paradigm, participation through interactive mediums has transformed from something limited and infrequent to something not only possible anytime and anywhere, but also presumed by many (Simon, 2010). We imagine all of these areas converging into a new genre of public space mobile games where many people participate in the same game. This multitude of people makes traditional means of communication not viable, thus creating an interesting problem to explore when it comes to the topic of our prototype; making selections in groups.

2.2 Purpose

One of the problems that arise when designing for contexts that can scale to large numbers of people is that of coordinating and connecting them. Allowing users to communicate verbally through chat or voice are solutions that may have worked in the past but only work on a limited number of users. In this project we will explore how selections can be made in playful settings that take place in public or semi-public spaces and involve many users, with the intent of gaining knowledge that is applicable to games and other playful activities in similar contexts.
2.3 Research Question

“How do we design interactions that coordinate a scalable number of people in the context of social games in public or semi-public spaces?”

- How do we make choices or selections that affect the whole group?
- How can we create a relationship and a sense of connection between the players?
- How do we manage delivering feedback to a significant number of people?

2.4 Limitations

In this paper, we are exploring the social aspects of games where players share a physical space as part of the game experience and make decisions as individuals that affect the entire group.

When we mention the concept of transmedia in relation to games in this project, we are talking about the concept of transmedial access. That is to say that the game experience flows across multiple devices (Bardzell et al. 2007) and not the flow of narrative through different kinds of media (such as film, comics, etc) as Henry Jenkins uses the term transmedia (2006).

It is also important to make the distinction between transmedial access and cross-platform or multi-platform; the latter is used to describe the availability of a game or software on multiple platforms or devices (for example Wii/Xbox360/PS3) but the game experience does not flow across those platforms and the players do not share the same game world.

By the social element of game play we do not refer to game content being shared on social media; instead we mean games where players share a physical space while playing, where they have common goals or compete with each other.

While the project focuses on the use of smartphones and shared displays to connect and coordinate players, the topics of multiple display cognitive psychology, and screen real-estate management are not discussed in this paper.

When we mention participation in this paper (mainly in chapter 3.1.3) we are referring to the principles described by Simon (2010) “users who act as content creators, distributors, consumers, critics, and collaborators”, in a varying degree. In our examples, we will highlight those that are interactive as these are ones of interest for our work, even though they might not represent the outmost participatory/co-creative end of the scale as much as the collaborative one.
2.5 Intended target group

The target group of the game that Massive Entertainment is developing, and therefore the target group of our design work, is everyone with a playful mindset and with a preference for music listening and social gatherings. We would particularly like to emphasize the inclusiveness of this work, as much of its meaning is anchored in a wide audience.
3.0 Theoretical research and related work

3.1 Cultural Convergence

3.1.1 Society goes tech

The first two decades of the life of the internet has been characterized by the notion of it being some sort of separate space, a virtual world apart from the real world. Today, words like “cyberspace”, or notions of an “alternate reality” seem very remote. The internet is such a natural part of our lives that we hardly refer to it at all; instead we refer to this or that service or webpage, tacitly implying that we are talking about a certain piece of information in a virtual network. The idea of an alternate reality in the early days of the internet made sense when its users were relatively few. Back then, the relations online were really separate from those offline. These two worlds would seldom overlap, by guess due to physical distances between people. This is however a natural early stage in any continuum of partial adoption. Today, for the average adult in the developed world, the social relations between online and offline friends and colleagues is so great that that overlap is substantial, making notions of “cyberspace” superfluous and obsolete (Shirky, 2009).

Portable devices such as laptops, tablets, mobile phones are now in the hands of ‘everyone’. According to a report from the technology research company Strategy Analytics (2012), the number of smartphones being used around the world topped 1 billion Q3 2012, and there is no sign of a slow-down. On the contrary, it is estimated to double the next three years from then, by 2015. And even if it’s still hard to establish a certain market penetration rate, there are some cautiously optimistic assumptions of growth in the developing world as well.

The discourse of the technological aspects of convergence can be enclosed into notions of trend and counter-trend. On one hand, the argument that points toward convergence goes “all media content is going to flow through a single black box into our living rooms (or, in the mobile scenario, through black boxes we carry around with us everywhere we go)” (Jenkins, 2006). By this it was meant that we will have a single device through which we access everything.

On the other hand, Jenkins, as well as the authors of this paper, also acknowledge a counter-trend that points in the opposite direction; saying that hardware diverges while content converges. This is summarized here in a few words from a report by Cheskin Research (2002): “The old idea of convergence was that all devices would converge into one central device that did everything for you (a la the universal remote). What we are now seeing is the hardware diverging while the content converges.” The
advocates of this trend argue that media technologies instead are, and occasionally should be, getting more and more context-specific and specialized. Although this is also true in many other appliances; with the smartphone example, the first idea is clearly defendable. On his blog, Jenkins asks “have you tried to buy a cellphone recently that only made phonecalls and did not perform a range of other media functions?” (Jenkins, 2006)

3.1.2 Boundaries are fading

In the last two decades we have been witnessing major shifts in the social, technological and medial aspects of our culture, to the extent that some have called it a digital renaissance. With the growth of the social web, or the Web 2.0 paradigm, the once ubiquitous notion of “information society” seem to have given way to “convergence society.” The notion of convergence though, does not implicate the total collapse and displacement of old media with new; as was claimed by the digital revolution paradigm before the dotcom meltdown during the 90’s; rather, it emphasizes the complex ways in which old and new media interact (Jenkins, 2008).

These transitions and transformations of the different aspects of society and culture have blurred the traditional boundaries between work and play, and from where to access what; thus presenting new challenges for designers to deal with. The issues that arise from technology crossing between these different situations are addressed in the third wave HCI agenda. (Bødker, 2006).

Within the field of media, convergence has evoked usage of old media ideas such as televisions and personal music players with new technologies like console games and mobile phones as music players. Social or organic convergence have meant that people have become able to utilize many different media technologies at the same time such as listening to music while watching TV. (Jenkins, 2008) As we will elaborate further on in this paper; these different media channels are also surpassing their boundaries, flowing into each other.

By cultural convergence, as Jenkins continues, the audience becomes the user; there are more and more user-generated content in TV and newspaper. It is becoming clear to us that many people are no longer satisfied with just being passive recievers.

To the technological space, convergence has primarily meant the digitalization of words, images and sound so that they can flow across multiple platforms, but also the coalescence of multiple media technologies merging into one media product that has multiple tasks.

Another aspect of convergence that we see is the use of technology in social public spaces; in our work illustrated by cultural institutions/expos through the phenomenon we call the participatory museum. The growing interest in interactive, responsive or ambient installations in these kinds of public spaces exemplify that technology is a welcomed contribution. We want to explore the possible outcomes of this context fused together with the magic of game play through the use of devices that “everybody” has, in a connected, truly social way. This ‘fusion’ could bring gaming from the typical settings where it normally occurs into the field of outside, public spaces. This idea of
game play meeting culture, sociality, emotion, and experience is something clearly compatible with the trends described in the paper on third wave HCI by Susanne Bødker (2006).

3.1.3 The Participatory Museum

The title sounds like an oxymoron. Until recently, museums have not been very representative of stimulating participation; rather they have been quite closed for any kind of public interference. But as technology have been proliferating in the everyday life of the many people, so have cultural institutions, that previously had little interest in technology, more and more embraced the use of it. These kind of establishments therefore highlights the elements of sociality and participation in public spaces - through interactive artifacts and gamification. Examples are exhibitions consisting entirely of interactive artworks, as well as different ways to augment the visitor experience in traditional exhibitions and expos. (Simon, 2010) Today we have a multitude of events, expos and museums having realized the power of the authentic, rich experiences implicated in the process of participation. As stated in his blog, Ed Rodley, an exhibit developer with over 20 years of experience in the field, outlines some reasons for interactive museums: “When done well, interactive exhibits can engage visitors in active and prolonged learning experiences of astonishing depth and duration.” Among the qualities that Rodley identifies as good interactive exhibits are that they shall “provoke emotional responses”, “encourage play”, “reward visitors” and “respond to visitors’ actions”. (Rodley, 2011) An extraordinary example of this is the Murder at the Met game, where visitors are encouraged to solve a murder mystery at the Metropolitan Museum of Art (see figures 3.1 and 3.2).

![Figure 3.1](image1.png) **Figure 3.1** Visitors playing a detective game in Murder goes mobile at the Met! The Metropolitan Museum of Art (2012)

![Figure 3.2](image2.png) **Figure 3.2** The interface of the game

In their work on ambient displays in museums, Boehner et al. are writing; “[...] we argue that computational devices can play a valuable role in drawing attention to and stimulating reflection on emotion, spirituality, communion, and creativity through a
model of co-construction between designers, systems, and people.” (Boehner et al. 2005).

Another example on the more participatory/co-creative end of the scale was the St. Louis Science Center’s *Youth Exploring Science* program (YES). Here, teenagers were employed to design, install and staff interactive science exhibits for the local community’s children’s organizations.

The Oakland Museum’s co-creative project the Days of the Dead constitutes another example. The museum has a history of community commitment and democracy, and an ambition to create a platform for its highly diverse and multicultural neighborhood. The Days of the Dead, an annual co-creative project, allow people to share their stories and discuss art through interactive journals as well as adding their own stories and pictures to a collage on display (Simon 2010).

Within the sphere of commercial spaces such as shopping malls, news agencies and banks, there are many examples of interactive installations, by guess to strengthen the brand by communicating innovative ambitions as well as providing the customer with an extraordinary experience. Interactive floors, walls, and other artworks, as well as touch screens with maps or business-related information are getting more common.

### 3.1.4 Social barriers

At the same time that we witness changes in society in terms of blurred boundaries and media convergence, there are also tendencies towards polarization, where people, either by choice or by predisposing social factors, end up in one or another dichotomous category or group. In the field of games, many have felt alienated by the prevalence of the increasingly complex hardcore games. Games aimed at the stereotypical male gamer exclude many from taking part in something that might have been a meaningful or joyful experience. Categorization into “in-groups” and “out-groups” have always been part of the human nature, according to social identity theorists that deal with inter-group behavior. They range from larger-scale social categories such as gender, religion, and ethnicity, to smaller-scale self-defined groups whose characterization can be based upon even very trivial criteria, such as preferences for a certain painting over another, as in a social identity theory experiment conducted by Tajfel et al (1974). This perceived membership of a certain group builds upon strong intergroup differentiation; the in-group does not exist without the out-group (Tajfel 1974). This creates an exclusiveness that affirms the members of the in-group but helps cementing the bulwarks that separates those who ‘belong’ from those who don’t, excluding many people based upon irrelevant criteria such as gender, age and other demographics. As an underlying driving force throughout our paper from theory to prototype design, there is an aim to encourage the discontinuation of these invisible boundaries.
3.1.5 The Casual Revolution

In his book *A Casual Revolution* (2010) Jesper Juul discusses the topic of casual games and games becoming *normal*. By normal, he means that games are no longer restricted to *gamers*, gamers being players who dedicate time and money towards games. Juul states that when video games first emerged, they did not have a specific audience and could be enjoyed by many. As the medium progressed however, the increasing complexity in game design and the appearance of consoles became barriers that alienated many.

Having a smartphone nowadays gives you access to a plethora of games of all genres. A simple look at the featured section of the Apple App Store shows how dominant games are amongst apps. A recent report by The Nielsen Company (2013) shows games as the most used type of app in over half of the countries involved in their mobile market research. We can also see that the most popular of these games are usually simple games that can be played in short and quick doses. A prime example of that being *Angry Birds* (2009) with it’s easy to learn interface and game mechanics. To quote Jesper Juul “This is the moment in which the simplicity of early video games is being rediscovered, while new flexible designs are letting videogames fit into the lives of players”.

While accessibility was a major issue, it is not the only factor in the casual revolution. Juul also identifies games with *mimetic interfaces* as a force in this revolution. He explains that they are games in which the player performs physical activities that mimic the on-screen activity. This can be seen in most Nintendo Wii games. If we take Wii Tennis for example, we can see that the player moves his arm as if he were actually playing tennis and that translates into the game correctly. This makes games like *Wii tennis* (2006) very easy to learn even for players unfamiliar with the console. Juul also points out that mimetic interfaces also make it enjoyable for spectators who are watching the player and makes them want to play as well.

We can see that today’s smartphones have many qualities that would allow them to become mimetic interfaces for games. Many games already use features like the gyroscope to recreate games like the classic labyrinth (see figures 3.3 and 3.4).

*Figure 3.3 Labyrinth (Brio, 1946)  Figure 3.4 Wooden Labyrinth 3d (Qvik, 2009)*
Juul also touches on the topic of social interactions between players that occur off-screen in such socially embeddable games. This is something that games in social contexts should take in mind. One cannot design to force off-screen interactions but one should design to allow for them.

3.2 Second Screens and shared displays

In their work *Toward Universal Mobile Interaction for Shared Displays*, (Paek et al. 2004) are describing the benefits of using shared displays when interacting with a system through a mobile device. Whereas mobile devices have tremendous flexibility when it comes to information access; they are not as good as their larger high resolution display counterparts at delivering feedback to an extended number of users in crowds. Not only due to limited screen sizes, bandwidth and computational power, but also because of they often require the user to engage with the device, breaking the social atmosphere, as opposed to getting the information needed in a glance. This setup imposes conditions on what information is to be displayed on the two screens and how to visually communicate what interactions belong together.

Paek et al. (2004) have identified four different situations where shared displays and mobile phones are suitable:

- *Jukebox applications* treat the display as a limited resource that must be shared (perhaps reluctantly) by users.
- *Collaboration tools* allow multiple people to contribute to a single goal. Surveys or cooperative games constitute examples.
- *Communication tools* facilitate communication between individual users; for example, bulletin boards.
- *Arena applications* involve competitive interaction.]

They also mention situations where an extended number of users are assembled to conduct polls, build consensus, or make decisions in groups.

Some examples follow below, categorized in terms of interactivity (or lack thereof). The contexts differ widely, from isolated installations in public spaces to home usage. The common ground for all is that the installations are custom built for a single application, whereas in our work, we suggest that any screen that has a connection to the internet, could be the shared display.
3.2.1 In the beginning, there were shared displays...

There is extensive research on the topic of shared displays, mainly dealing with shared displays as electronic street billboards, or bulletin boards enabling organizations to communicate business information to employees or the public. This research has primarily dealt with cognitive aspects and how to best utilize screen real estate. What all of these examples have in common is that there is no interactivity.

3.2.2 Interactive shared displays, single-user

Other shared displays with interactive capabilities such as touch screens, have been used as group collaboration tools, and also widely for public service or commercial kiosks - computer terminals with very restricted use functionality; but just as in the case of the TV, the user is limited to a single modality of interaction (touch) and where interaction normally can only occur from only one or a very limited number of users at the same time, tied to the physical spot of the kiosk.

One example of this is the BBCi public display (see figure 3.5) that consisted of a touchpad installed on the window to the ground level BBCi office in London, where passers-by could request news and make other choices on what they wanted to see or chat with the staff, mainly through the use of SMS. The text messages then displayed on a large message board on the wall of the chat studio.

![Figure 3.5](image1) BBCi allows for direct interaction with the service through a touch screen built into the window

![Figure 3.6](image2) A shared touch-screen at the EGF Interactive Roadshow 2007, an exhibition for raising environmental awareness

Another typical example of shared interactive display as a learning/collaboration tool (see figure 3.6). This one is from the EGF Interactive Environmental Roadshow 2007, by YDreams.
3.2.3 Interactive shared displays, multi-user

At expos and events, many-to-one interactive system exhibits (where many people can interact with the system simultaneously and get their feedback from one large display) are nothing new. Although all of the former examples have been about sharing the feedback from a central spot, here is where the element of sociality and social experience truly comes into play. One example was at the Portuguese Pavilion exhibit, World Expo Zaragoza 2008 (see figure 3.7), where the installation consisted of a 18 meter long projection on a wall showing the Guadiana river flowing at the bottom, and words that had something to do with environmental issues descended slowly from the top, down across the wall. People could then grab their favorite words and throw them into the river. The most frequently chosen words were later inserted into sentences, and then displayed on a wall next to the exhibit.

![Image](image.jpg)

**Figure 3.7** Exhibit Guadiana River, Portuguese Pavilion, World Expo Zaragoza 2008

Another example is the artistic interactive installation *Amodal Suspension* (Lozano-Hemmer, Rafael 2003), developed for the opening of the new Yamaguchi Center for Arts and Media (YCAM) in Japan. From the 1st to the 24th of November 2003 people could use the website to send text messages to each other through a cell phone or a computer. The text messages were then encoded as sequences of flashes with 20 robotically-controlled searchlights, turning the sky of Yamaguchi into a giant communication switchboard. Another example can be seen in figure 3.8.
The first ones to look into the topic of shared screens as a collaborative tool were the UbiComp software team at Xerox PARC around 1990. The Liveboard allowed for distributed control through multiple input sources in situations of collaborative working, presentations and remote communication. The inch-sized PARCpad and the foot-sized PARCtab, the predecessors of today’s smartphones and tablets, allowed people to access and share information anytime by being constantly connected. The whole idea of ubiquitous computing and the format and function of these devices, as opposed to the desktop computers, would embed themselves into our daily lives in an invisible way, merging with human activities instead of intruding on them (Weiser, 1999).

### 3.2.4 Shared displays and interactive second screens at home

This section is about the primary and secondary screen constellation where the primary screen generally is a TV. The applications on the second screen here generally feature content that relate to, but that (with few exceptions) doesn’t allow for direct interaction with the primary screen. This can be seen in a number of applications like Zeebox, Viggle, Like.tv and IntoNow, that have constantly increasing user bases. These apps augment your TV experience using the smart phone/tablet to give you extra information about your TV shows, making it easier to use social media and talk about what you’re watching as well as letting you interact with your show in some cases (voting for contestants on some shows).
This previous research and implementations exemplifies the different scenarios where interactive, shared displays are already taking a place in everyday life.

3.2.5 Shared displays, Second Screens & Games

The video game industry hasn’t failed to notice the power of the second screen, but video games are an interactive medium to begin with and must deal with the second screen in a different manner. Nintendo’s Wii U incorporates a touch screen into its gamepad which supplements the game play on the main TV screen or can be used as a main screen when the TV is off for some games (Nintendo, 2013). Microsoft has released Xbox SmartGlass as a companion application for Xbox 360 which allows mobile devices to serve as second screens or remote controllers for the Xbox 360 (Microsoft, 2013). Sony has also announced that it will release a PlayStation App alongside the PS4 which will work in a similar way to the Xbox SmartGlass. Sony’s handheld console the PS Vita (see figure 3.10) will also serve as a second screen for the PS4 and will have similar functionality to Nintendo’s Wii U Gamepad (Sony Computer Entertainment Europe, 2013).

Some of these second screen devices will interact with games similarly to the way the TV shows do. However, since there is a direct connection between the second screen and the main screen in the case of video games, the second screen is sometimes used in a more interactive way as a controller. This allows content creators to utilize the affordances of the second screen devices when creating interactive gaming experiences such as the touch screen and motion controls. A great example of second screens enhancing the gaming experience is Rayman Legends (Ubisoft, 2013) which can be compared to Rayman Origins (Ubisoft, 2011). In addition to the platformer gameplay that Rayman Origins offers using traditional controls, Rayman Legends allows the player holding the Wii U GamePad to interact with game objects to assist the other players using touch controls (see figure 3.11).
3.3 Public space and games

3.3.1 Gaming on the Go

The idea of portable gaming has existed for a very long time starting with LED based toys and calculator size games such as the Nintendo Game&Watch which led to the Nintendo Gameboy and its successors and the current gen of handhelds like the Nintendo 3DS and Sony’s PS Vita. Along the road many attempts at handheld consoles were made and many failed like Tiger Telematics’ Gizmondo which bankrupted the company (GameTrailers.com, 2007). However, this did nothing to stop the ongoing appearance of new handheld consoles.

As mobile phones spread, games started to appear on them with increasing sophistication as the hardware allowed. This led to Nokia’s attempt to create a mobile phone aimed at gamers with the N-Gage which failed due to certain design flaws. This continued with the rise of smartphones which opened up an entirely new market of casual gamers to the gaming industry. The number of downloads for Angry Birds (Cavalli, 2013) alone are proof that there is a new type of gamer out there; the smartphone gamer. With casual games that take advantage of the smartphone’s affordances and hardware advancements that allow for more “hardcore” games. The idea of the smartphone as a handheld console is certainly viable if not already a reality.
Figures 3.14 and 3.15 are just two examples of peripherals designed to give console-like controls to smartphone games.

![The GameKlip (2012)](image1)

![PhoneJoy Play Gamepad (2013)](image2)

**Figure 3.14** The GameKlip (2012)  **Figure 3.15** PhoneJoy Play Gamepad (2013)

We previously mentioned how console manufacturers are attempting to harness the power of smartphones and tablets as a second screen, but videogame developers have also taken note of the opportunity and taken matters into their own hands. Applying the concepts of Transmedial experiences and creating companion applications that supplement and enhance the experience of their console games. These apps can simply provide additional information to the game, are games unto themselves and at times they even affect the console game’s experience.

![Dragon Shout for Skyrim (2011)](image3)

![Far Cry 3 Outpost (2012)](image4)

![Mass Effect 3 Datapad (2012)](image5)

**Figure 3.16** Dragon Shout for Skyrim (2011)  **Figure 3.17** Far Cry 3 Outpost (2012)  **Figure 3.18** Mass Effect 3 Datapad (2012)

The examples in figures 3.16 to 3.18 provide some proof that players want more ways of interacting with their console games especially when some of them are actually fan made like the Dragon Shout for Skyrim (Figure 3.16). Having tested the Far Cry 3 Outpost (Figure 3.17), we can confirm the appeal of interacting with games even when
away from the console. This goes as far as wanting to take the whole game with you which Sony introduced with the PS3/PSP Remote Play and are going to continue to support with the PS4/PS Vita. Sony’s acquisition of the cloud gaming service GAIKAI (Gaikai, 2013) could also be related to their support of this feature.

3.3.2 Location Based Mobile Games

The rise of mobile phones not only allowed people to play regular digital games on the go, but also gave way to new types of games. These games take advantage of the mobile device’s internet and location-awareness capabilities to combine physical spaces and urban environments with digital spaces. Silva and Sutko (2009) split these games into four categories: Location based mobile games (LBMG), hybrid reality games, pervasive games and urban games. They go on to say that these categories are not exclusive and some games may fall into more than one of these categories. These categories help us identify distinct characteristics in these games such as urban games using urban spaces as the game board and LBMGs using location awareness in mobile devices. Games like BotFighters are considered pervasive, location based and urban (Sotamaa, 2002).

![Botfighters](image)

**Figure 3.19 Botfighters (2001).**

Most interesting to us are LBMGs that use location awareness in relation to other players. In other words, players’ proximity to one another is more important than place specificity. This is due to our focus on the social and cultural potential of mobile games. The place in this case provides a shared physical context to the players. However, the place could also determine the number of players and what type of game can be played. A dance club can provide room for a larger number of players than a living room and more freedom of movement than a movie theater, while the theater can provide a superior shared screen experience and the living room a more intimate social experience.

3.3.3 The Magic Circle

The Magic Circle is a term first introduced by Johan Huizinga in his book *Homo Ludens* (1998[1949]). Huizinga mentions the magic circle when talking about the spatial limits of play and the playgrounds where the game’s special rules apply and are separated from the real world. Salen and Zimmerman adapt this concept in *The Rules*
of Play (2004) where they describe the magic circle as a boundary for the game in both time and space. By entering the magic circle the players agree to accept the rules of the game.

In relation to our project, the magic circle is created when the players connect to each other at their current location. We can then take into consideration which places are more suited to accommodate this magic circle as we mentioned in the previous section. A person walking into a dance club expects music and dancing to be part of the experience.

3.3.4 The Spirit of Competition

In his book Man, play and games (2001), Roger Caillois mentions Agon (competition) as one of the fundamental categories of games. Competition often revolves around qualities like strength, speed, memory...etc. and the winner’s claim to being superior to others in these qualities. Caillois mentions that the human spirit of competition even appears in children as they grow and their personalities begin to appear. This can be seen in childish challenges such as staring contests, holding your breath underwater and many more. Thus, it is apparent to us that the need to prove one’s superiority amongst others is sufficient motivation for many activities.

3.4 Connections and Collaboration

3.4.1 Social Networks

In his book Here Comes Everybody (2009), Clay Shirky talks about how people are connected in social networks in his exploration of the Six Degrees of Separation theory. He says that in small groups, everyone connects with everyone else in form of a dense cluster. However, he goes on to explain that this pattern of connections becomes more difficult to sustain as the group grows larger. His solution is: “You let the small groups connect tightly, and then you connect the groups. But you can’t really connect groups— you connect people within groups.”. Figure 3.20 is a graphical representation of this idea.
This idea is strongly related to Albert-Laszló Barabási’s concept of hubs in social networks which he first mentioned in 2003. According to Barabási these hubs are nodes with large numbers of connections in the network. Having hubs in a network gives strength and easier growth due to the fact that new nodes or members of a network prefer to connect to hubs (Barabási & Bonabeau, 2003).

3.4.2 Making connections

In this section we talk about a few examples of connections that are non-traditional in nature. By traditional we refer to logging in using a username and password or simply searching for people or devices digitally. The non-traditional methods mentioned here would help us in the design process. As mentioned earlier in section 3.3.2, LBMGs use location awareness to connect the players with the physical space. In the example of Botfighters, players in close proximity are alerted to each other’s presence and are thus connected due to sharing the same physical space.

Nintendo have attempted different methods of connecting their players to each other when using portable consoles. The Game Link Cable was used to connect several generations of Game Boy handheld players and allowed them to play multiplayer games or trade items and unlock hidden features (Figure 5.21). The Nintendo 3DS makes use of a feature called StreetPass which allows the trading of game data when players pass by each other as long as the device was in sleep mode (Figure 5.22).
Samsung has introduced a feature called *S Beam* in some of their smartphones which relies on NFC (Near Field Communication). Using NFC and S Beam, two users can tap the backs of their Samsung phones against each other to establish a connection and share information and data easily (Samsung, 2013).

*Bump* is an application available for iPhone and Android which allows users to share contact information, photos, videos, and audio files by simply bumping their phones together (Bump Technologies, 2012).

In response to possible exploitations and security issues with Bump, the paper titled *Don’t Bump, Shake on it* presents *Shot* (Shake on it) as a more secure replacement (Studer et al. 2011). All of these examples helped us think of novel ways of connecting people.
3.4.3 Collaborative music listening

Taste in music is something very representative of the self and the group, and are thus deeply embedded in the social aspects of culture. It is a resource of understanding and portraying identities, a reason for social occasioning, and a topic for discussion and evaluation. This chapter discusses the changes in behaviour when people’s music selections are made public and where these can be viewed and judged. In their book *Consuming Music Together*, O’Hara et al. (2006) are highlighting interesting social effects created by this publication or visualization of personal music collections: One example is the music sharing feature of iTunes where users are able to share music across local networks through streaming, thereby making their music collections public. Through this feature, iTunes became not only a tool for music listening, but also for impression management. Because of users within these subnetworks were likely to meet in real life, presumably their social and organizational spheres would occasionally overlap; translating their taste in music into social meaning in the real world. As a result, users were seen to create more “representative” collections of music. Likewise, key stakeholders in venues that play music in their proper spaces (such as bars, nightclubs and coffee shops) are also aware of the social conventions that music can convey and that music selection therefore requires sensible consideration. Because of the social consequences, the distribution of control of music selection in these kinds of spaces becomes critical. To maintain a level of control, these kinds of spaces have traditionally employed some kind of filtering: A jukebox, or a person, acting as a music selection portal. The jukebox is giving the audience an interface to make music selections while limiting the collection of music to be played. Likewise, the DJ enables people to make a request, but the concept is restricting them from physically browsing through the records and putting them on the decks. (O’Hara et al. 2006)

The process of control negotiation is not merely a technical discussion, the request to the DJ for a song not just the need for an individual to listen to a particular song. Rather, it is this social dimension of control negotiation that is significant for us: The values that are conveyed when taste in music is openly exposed; the discussions that take place, the expression of the identity. As O’Hara et al. put it; “The choice is in many ways a public performance”.

In the way that the request bears so much social meaning, it has a strong potential for social bonding and identity maintenance. Exploring and understanding the distribution of control beyond these mediating ‘portals’, as well as the motivational factors of identity maintenance and impression management, are key concerns for us in our work.

There are a number of different projects that have experimented with the idea of control distribution. One is Jukola from 2003; an interactive MP3 jukebox which utilizes PDA’s to distribute music selection among visitors. The PDA’s were placed across tables in a bar, and visitors were invited to vote for the next song to be played. Dissimilar to a ‘regular’ jukebox, it wasn’t guaranteed that nominated songs got played; instead, they were subjects to subsequent voting by other visitors. The owners of the place played part in controlling the sonic ambience of the bar in the way that they were
building the pool of music to choose from. Figures 2.25 to 3.27 show Jukola, designed by the Appliance Studio with support from Watershed as part of Mobile Bristol.

![Figure 3.25](image1) **Figure 3.25** Jukola, handheld devices at bar tables

![Figure 3.26](image2) **Figure 3.26** Jukola, the touch screen public display

![Figure 3.27](image3) **Figure 3.27** Jukola Handheld device interface

Figure 3.28 shows another, newer example of distributed music selection. This is Touchtunes, an interactive jukebox with a complementary smartphone app to control it. This system works like a traditional jukebox and thus requires a specific piece of hardware to be installed.

![Figure 3.28](image4) **Figure 3.28** TouchTunes jukebox

![Figure 3.29](image5) **Figure 3.29** The mobile interface of the TouchTunes app

Figure 3.30 shows a product that is more appropriate for home usage, as it doesn’t require any additional hardware but instead works by transforming a normal PC into a kiosk (terminal with limited interactions).
Figure 3.30 TouchTone audio system.

The next example lets you store your entire music collection in the Cloud and listen to it through a smartphone or another supported device.

Figure 3.31 shows Style Jukebox app for smartphones
4.0 Method

4.1 Literature studies

Like many other interaction design projects; emphasis in this work lies within the practical parts of the process; workshops, interviews and other field studies as well as iterative use tests of prototypes. However, the armory of methods to select between to get a useful result is always grounded in theory. Also, in the effort to make a novel contribution to the IxD field, it is crucial to know what others have done in the adjacent area. Literature studies have helped to give shape to the conceptual idea by providing the background and identifying the trends pointing us in this certain direction. Books, articles and talks have given us an understanding of the topics that are covered in this thesis. Topics of cultural convergence, public space interactives and public space gaming have laid the foundation for our work.

4.2 Design principles

4.2.1 User Centered Design

User centered design (UCD) is a design approach that focuses on involving the intended users of a product or service in the design process. UCD focuses on the idea that the designer is not the user and as such needs to involve the users through various methods and at different stages of the design. The user’s role is to provide the designer with information and the designer’s role is to translate that information into needs and goals that guide the design. It is important that the designer identify the correct type of user and which information is relevant (Saffer, 2010).

4.2.2 Lead user design strategy

In order to reach the widest possible audience, as is the goal for the Massive Entertainment game and therefore also our prototype; we wanted to anchor our approach to one of the fundamental aspects of inclusive design; the lead user design strategy, in the recruitment of participants for the design process. Lead users are early adopters of novel products who will be followed by the larger population over time. They are representatives of the larger population that highlights particular behaviors
and needs, but also problems with current configurations. Insights into their frameworks, workarounds, and their expertise are of great value to the design process (von Hippel, 1986).

As von Hippel himself puts it: “Lead users are users whose present strong needs will become general in a marketplace months or years in the future. Since lead users are familiar with conditions which lie in the future for most others, they can serve as a need-forecasting laboratory for marketing research. Moreover, since lead users often attempt to fill the need they experience, they can provide new product concept and design data as well.”

By designing for the lead user, we mean that the entire range of average wants and needs within the frames of our project, will fall somewhere on that scale.

4.2.3 Experience Design

This form of post-materialistic approach is focusing on the experience part of a product; the service it performs, the emotions that the service produces. According to Marc Hassenzahl, professor for "Experience and Interaction" at the Folkwang University of Arts in Essen, true experience design is characterized by the diminishing of the significance of the material object in favor of the emotional value it affords. It occurs when the product "transcends its encasing". (Hassenzahl, 2011)

4.2.4 Third wave HCI Design goals

Second wave HCI introduced many proactive, user-centered, context-sensitive methods in place of rigid structures, guidelines and systematic testing in laboratories. However, the theory focused mainly on the work situation and posited that the work context was the center of interest for any design approach. Design goals of the third wave human computer interaction are moving beyond the context of the workspace and notions of use efficiency and effectiveness; it’s rather embracing the cultural, social, emotional aspects of any design. (Bødker, 2006)

It is within this logic it becomes interesting to explore the ability to interact with a game in a social way; focusing on the proximity to others and the shared experience through a relatively cheap and readily accessible technology such as the smartphone. The design goals of third wave HCI clearly underpins the idea of players accessing their games anywhere, which in our case means that any screen can be the shared screen, and that interaction is done through a device that ‘everyone’ has; the smartphone. Participation, also an important component of the third wave HCI agenda, is also the foundation of our design work as it builds upon the idea that to remain in the game, users need to stay active, to communicate and cooperate.

As Mark Weiser stated back in 1993, a good tool is one that is invisible. Not in the literal sense, but in a cognitive. In his paper The world is not a desktop (1993) he uses eyeglasses as a metaphor; you don’t look at the eyeglasses - you look at the world. The
tool is not literally invisible, but it allows the user to act through it, it becomes an augmentation of the self, rather than an intruding on the consciousness. Throughout the second wave paradigm, the computer was at the center of attention and people tended to focus on the tool rather than on the task they were about to accomplish. The computer needed space on the desktop, it had to be booted up, and required a lot of learning in order to operate it. The idea of ubiquitous computing is the opposite of this: Computers and computational devices should merge into the background, the invisible.

4.3 Field studies

4.3.1 Observations

Observations of the research subjects in their use context is a way to help the designer to gain a more thorough understanding of the way the intended users are performing their activities. By observing users in their environment, they implicitly tell a rich story which can then be used by the design team to inform important design decisions later in the implementation process.

One of the strategies for doing so was to find relevant equivalents already existing on the market. The information we were looking for was selected parts of the interactions with certain games; and non-game applications that would allow us to know more about preferred interaction styles. Context observations have been made at clubs and home parties.

4.3.2 Interviews

We used unstructured interviews due to the exploratory nature of this method. The unstructured interview is much like a conversation that revolves around a specific topic. The interviewer has an agenda making sure that necessary topics are covered, but is always prepared to follow up on unanticipated answers dynamically, thereby leading to conversations of considerable depth. Open-ended questions as prescribed by this method, makes unstructured interviews particularly inclined to generate rich information, as the interviewee’s answers are not controlled in format or length - interviewees are allowed to answer as briefly or fully as they wish. The drawback of the method is that the outcome data is unstructured, interrelated and complex, thus requiring the interviewer to fine-tune the balance of having an agenda, but at the same time stay open to and welcome surprising viewpoints, in order to transform the information from different interviews into analyzable patterns. (Preece, et al. 2007)
4.3.3 Questionnaires

To get more research data that is relevant to our topic, we chose to send out an online questionnaire through the social networks we had access to and encouraging people to spread the questionnaire in order to reach a wider group than our own social circles. The purpose of the questionnaire was to get a better understanding of people’s habits and preferences in relation to our design topic. This information would be used to influence the design process and our other research methods.

One of the problems that come with online surveys and questionnaires is that it is difficult to identify the relation between the number of respondents and the total number of those who received the questionnaire (Preece et al. 2007). However, the fact that our respondents were self selected helped us narrow down our target audience as only the people who were interested in parties and music selection, answered our questions. An option to leave contact information was also included at the end of the questionnaire which allowed us to find real enthusiasts for further workshops and tests.

The questions were arranged in a way that builds up to make sure the respondent doesn’t get confused as to what he is being asked. The response format used was mostly open text fields to allow the respondents to express themselves freely and to encourage them to talk about their own experiences and tell their own stories. Multiple choice questions and scales were used only sparingly and only when suitable. The overall aim was to get qualitative data rather than quantitative data.

4.3.4 Focus groups

One of the main parts of our design research was a workshop to follow up on the questionnaire, in order to acquire a more exhaustive probe of ideas. The advantage of doing this in the focus group format is that we then get the ‘cascading’ effects of the group, where members of the group can chain ideas as follow ups to other ideas. The focus group was constituted of experts (DJ’s) and enthusiasts; early adopters as well as those who preferred also older techniques (turntables and vinyl), as we decided on a lead user-centered design approach (von Hippel, 1986). A focus group, as explained by Preece et al., consists of a representative sample of the target group who come together to freely and openly discuss a concept within a certain framework and get different perspectives on the topic. (Preece et al. 2007)

4.3.5 Data recording

Video recording with a camera is an effective way of capturing both visual and audio data for later review, so that the designers are able to go through the material again when needed. One problem with using cameras is that it can be perceived as intrusive by the participants and therefore have an inhibitory effect on the activities (Preece et al. 2007). Because of this it’s imperative to maintain a great level of sensitivity and get a feel for the group in order to determine whenever this would be happening. So in order to work around this, we placed the camera on a tripod in a corner and recorded
everything from beginning to end without paying attention to the camera at all; this helped everyone to forget about it entirely. Other important measures that we took was asking for allowance to shoot, and to ensure everybody’s privacy by treating the material with serious integrity.

4.4 Prototyping

“A prototype is a limited representation of a design that allows users to interact with it and to explore its suitability” (Preece et al. 2007)

Prototyping has always been an activity that we as interaction designers rely heavily upon. When done right, a prototype test can provide more accurate information regarding user experience than interviews and focus groups can give. In this project in particular, creating games that would fit the context of the project was not realistic. However, creating prototypes in similar situations was the best choice for us.

Sketching was used throughout the design process as a means to quickly visualize ideas. Sketches with pen and paper can be made quickly and can be changed easily. They make it easier for people to comment on and we as designers are more open to criticism when it comes to sketches (Saffer, 2010).

Storyboards were used to further illustrate some concepts as they helped explain how the design would work in certain situations. Storyboards help the users step into a certain scenario, thus allowing them to provide better feedback regarding the design (Preece et al. 2007). Wireframes were also used to define the features of the designs that progressed the furthest in our design process.

The Wizard of Oz prototyping method was used to test the designs before too much time was spent on coding. The method takes its name from The Wonderful Wizard of Oz (Baum, 2005) and mainly states that if we create the illusion of a working system, the response to that system will be real. This method is used to evaluate the user’s experience and not the prototype and its technology (Buxton, 2007). For example if a hidden operator activates a button the moment a user touches that button on a non-touch screen, it will give the user the impression that it is a touch screen.
4.5 Evaluation method

As we are designing for tacit experience, metrics that deal with efficiency, usability and utility are insufficient for evaluation. Success can therefore not be determined by how efficiently a user could complete a certain task, or how well the system could communicate its content. Instead, we need to look at non-formal aspects of experience and map those to subjects that can be discussed and evaluated. We discuss things like how engaging the interaction is, how well the proposed system integrate with its context, and how or to what extent it intervenes in the social aspects of the design.
Before going into the design process it is important to recall the main ideas we took with us from the theoretical research section. First off we’ve established the idea of cultural convergence that explained in the way users have incorporated tech into their everyday lives, and how society have been growing accustomed to the flow of media content across multiple platforms and the transformation from a consumer culture to a participatory culture. The participatory museum exemplified public spaces exploiting interactive artefacts. From there, attention was drawn to how it is possible to participate with an exhibit or other interactive public artefact when there are more than just a few people involved; this lead to the theories and examples of mobile devices and shared screens. As a result we’ve seen a spread in shared displays in public spaces as well as interactive installations, many of which involve games. This also has to do with the idea of digital games becoming more normal and accessible nowadays.

We also exemplified that smartphones/tablets are more and more commonly used as companion devices to the tv, in a first/second-screen constellation. The continued success of mobile games and the inherent qualities that smartphones have pushes them into the position of being used as game controllers.

Chapter 3.2 highlighted advantages and disadvantages of mobile phones and large displays respectively; and the combination of the two in situations where many people are participating in a common activity. In our work we wanted to leverage the potential of both worlds by combining the flexible, cheap and readily accessible technology that’s encased in the smartphone, while handling feedback through a large shared display. We also needed to take into consideration that the content need to differ on the two screens, sometimes obviously, occasionally subtly, and how we can deploy these similarities and differences to ensure the consistency that gives the user a coherent experience.

We also emphasize the importance of user proximity over place specificity. That is to say: it does not matter where the users are as long as they are together. This also means that any screen can become the shared screen and that combined with the location provides the users with a shared physical context.

The design process focuses on the process of music selection as a group activity in the context of a party or club. The reason we chose this activity and context as our focus is because it is a social activity that has a defined space that allows for playful social
interactions. This allowed us to draw parallels between music selection and the problems of coordinating large numbers of people in social games in public or semi-public spaces. Concepts regarding connecting people and feedback were also discussed and suggested throughout the process though with less focus than the main selection issue.

Throughout the entire design process, we conducted research and field studies regarding music selection and social play in parties; in doing so, we came across several examples of collaborative music listening.

5.1 Field studies

5.1.1 Observations

Since there is no such thing (yet) as playing social digital games at semi-public or public parties; we decided to pay attention to general ambient conditions, social behaviour, and usage of technology in this kind of settings. We chose the far end of the publicity scale - a nightclub, since this context has the most extreme conditions that our prototype could be exposed to. The conditions and their findings respectively are listed below:

1. General noise level - shifted between loud and very loud.
2. General light level - shifted depending on the room.
3. How, and to what extent, people were using their mobile phones - In between songs, there were plenty usage of phones, mainly in order to send SMS messages.
4. How did people accommodate to the environment - With one term, slowly. People were generally shy in the beginning, standing close to the walls, keeping close to their friends.
5. Crowding - People were standing very close to each other even though there were space closer to the stage. Not until later when the band had played a couple of songs, and a few, less shy spectators started occupying that area, did more people feel comfortable to go further out onto the dance floor.
5.1.2 Interviews

As we started to close in on the topic of music selection at parties, we felt that we needed to hear from people who have experience in throwing parties where DJs were not involved and music selection needed to be handled in one way or another. These interviews were informal and unstructured in that the questions we asked were not fixed. However, we had a clear topic which the conversation revolved around and the questions aimed to keep that focus while still being flexible and reactive to the conversation.

The first interview was with Theo F. who is a 3rd year Interaction Design student at Malmö University. Theo has arranged many parties for his class and friends over the years and when it came to handling music selections he had much to say. The first thing Theo pointed out -and what would come up many times more- is that Spotify (2007-2013) was always the media player of choice. The people that came to his parties were usually classmates and their friends. This meant that not all the faces were familiar and the tastes in music always differed. Theo would always setup a playlist and invite some of the guests to add music to it a few days before his party. Despite that preparation, guests always wanted to add more songs to the list during the party and the number of songs added was always significant. Theo mentioned that he was always uncomfortable with strangers using his computer when adding songs to the playlist. His reasons involved people tampering with the song queue, his personal content or spilled beers. to deal with that he would often have to stand near the computer to make sure everything goes well.

Jasmin S. was the second student we interviewed. She also throws parties for her friends and classmates and their friends. Her experience was in most areas consistent
with Theo’s, but her solution was to always have one trusted person by the computer who is in charge of the music and taking requests from guests.

These results confirmed the validity of our context and the existence of a problem from the host’s perspective. Having only the host’s perspective drove to create a questionnaire as our next step in the process.

5.1.3 Questionnaire

The Questionnaire was intended to get more information from the perspective of both hosts and guests. The questions were adapted from those asked in the interviews and the results of the interviews after we reflected upon them. The additions were questions aimed at guests and how active they are in music selection. The full questionnaire and its results can be found in the appendix 8.2.

24 people responded to our questionnaire and based on the answers we’ve identified certain patterns and issues. Only 3 out of 24 respondents did not participate in selecting music as guests. Even those who did not participate stated that active participation in music selection was seen as a normal occurrence in most parties. Spotify was used regularly and it had both pros and cons: The song queue system is good, but often ignored. The wide selection of music satisfies everyone but could disrupt the soundscape.

“The host of the party selects the music, but mostly other people intervene and take over.”

“Spotify tends to be the foundation of any party music strategy nowadays, so it’s often a case of grabbing the computer and adding stuff to the playlist by myself or on demand from others.”

The overall consensus was that being able to request your favourite songs was a good thing but the way it was done usually gave way to chaotic results. sometimes even resulting in conflict.

“I actually almost ended up in a fight once at a big party where I, contrary to my beliefs, actually messed around with the playlist …”

As for DJs, the respondents agree that a DJ helps keep control and requesting songs usually works out.
5.2 Initial Concept

Out of the information we had at that point and a little brainstorming session we came up with a simple idea that would be very democratic. We imagined a system that would allow people to vote for their favorite musical genre and create a playlist using those genres. Each genre would get play time based on the amount of votes it had. The state of the playlist would show on a shared screen and allow users to change their votes using their phones to get the desired result.

![Figure 5.3 Sketch of genre voting](image)
![Figure 5.4 Shared screen prototype](image)

This idea was simple and showed promise and could serve as the framework for the next step of the project; where expert users and enthusiasts were invited to bring out more ideas.

5.3 Focus Group

The purpose of the focus group was to explore different ways of participation in a many-to-one-relationship with a system where the results affect the whole group, in the context of music selection in a semi public to public place. In selecting participants, we focused on finding lead users within the anticipated target group; music enthusiasts and DJ’s. Some of the participants were early adopters, others supporters of older music player techniques. What they all had in common was a particular interest in music and thus the context of our design proposal. Throughout the design process, they were the users from whom we drew inspiration, and with whom we drew a baseline of requirements to be met.

Six persons came to the session, three of them were vinyl enthusiasts with a
background in DJ-ing who mainly had turntables as their preferred music device; one was a party organizer and the remaining two music fiends.

5.3.1 Implementation

The framework of the discussion was everything from a semi public party to a nightclub, in order to keep the scalability. The focus group was slightly moderated when needed, and some pre-planned questions were used to make sure that all subjects were covered. Within each subject, the participants were encouraged to elaborate on their ideas in any direction they wanted until no more relevant information could be obtained; but when the discussions drifted too far off from our core topic, we posed another one of our questions to bring the discussion back on track.

As a way to inspire our participants to feel free to create whatever they come up with, we brought a lot of different materials for the workshop: post its, papers of different sizes, markers, pens, color pencils, modeling compound and such.

In order to create an unrestricted climate, imperative to the focus group, we advised that the focus group should not consider law, regulations, technical or any other limitations, but instead focus on the ideal; also the words “no” or “not” were not allowed in response to another person’s statement or idea.

The main questions that we wanted answered by the group were:

1. When selecting as a group or individually, where the whole group is affected, how could these selections be made more democratic, and should they be?
2. How important is being able to hear your favorite song as opposed to your favorite artist or genre?
3. What happens when the group decides on something that you don’t like?
4. What if someone picks a song that no one else likes, if that song could “kill” the party, should one be able to do that? What’s most important; to satisfy every individual or to keep the party happy?
5. Do other people’s selections affect your selection?

5. We also brought up some of the patterns that we had found in the questionnaire.

5.3.2 Analysis

After having analyzed the feedback from our participants, their thoughts were translated into a score of ideas, written down on paper notes (see full text in Appendix) and where each of them were placed somewhere around three categories which could be best described by their political counterparts: "anarchy," "democracy" and "dictatorship". Each of these could be imagined not as monolithic categories, but rather
as a spectrum where all ideas approximate one of the approaches to some degree. (See figures 5.5 and 5.6)

Anarchy: This category covers ideas that had something to do with queuing of songs in an open playlist; anyone can queue any song and put their song selection at the top of the queue. At the bottom of this spectrum, the DJ or host has from limited to very small role in the music selection. A current example of this is Spotify (2007), another well known concept is the juke box.

Democracy: This addresses the fundamental principles of proportional representation. All the ideas that had to do with the majority deciding what to play belongs here; for example proposals on voting for specific genres, artists or songs, or a system that puts a number of songs in a play queue, and guests decide what to be played by voting up / down songs that appear.

Dictatorship: Regardless of its negative connotation; all concepts that were about entitling one person to make the song selections. A current example is the DJ.

Figure 5.7 features two quotes from the focus group’s discussion that show two contradicting ideas. The voice of the individual against the voice of the majority. That is something that requires great consideration when trying to coordinate large numbers of people.
5.4 Concepts

Based on the analysis of all our research data in the previous sections and combining some of the best ideas from the focus group, we came up with a few concepts that were sketched and evaluated further.

The concept in figure 5.9 is based off the idea of controlling a party’s energy rather than specific songs or genres. One of the topics that were discussed in the focus group was that of songs of different genres could mix and how that would affect the soundscape of the party. In response to that, it was suggested that a rock song could have the same energy as a pop song and that such songs could be played in the same party without ruining the soundscape. This concept while interesting, did not give us enough interaction between people and was therefore left behind.

Figure 5.10 shows an app that consists of one button: The skip button. Most of the other concepts suggest that once a song is chosen in whatever manner, it would be played till the end. The skip button was a response to that and was meant to be used in instances where a song was overplayed or was really disruptive to the party. The general feedback towards such a button was however negative as the downside and possibility of it being misused outweighed the value of skipping a single song. The takeaway here was that we should focus on ensuring the best choices are made through positive interactions rather than allow bad decisions to be made and then reacting to them.
Figure 5.9 Controlling the energy of the party rather than specific songs or genres.

Figure 5.10 Skipping bad songs with the push of a button.

The concepts in figures 5.11 and 5.12 focused more on interactions that took advantage of actions that were inherent in the context. Figure 5.11 shows the idea of using interactive wristbands instead of wristbands that would be used for admission in concerts or music festivals. In this case the wearers could change the color of the wristband to communicate what kind of music they like to the DJ. In figure 5.12 we propose that shaking the phone while dancing or pumping fists in the air could send signals to the DJ or artist to communicate how much the audience is enjoying the music.
While these concepts and ideas had their merits we felt that none of them had enough strength to help us explore the idea of coordinating large numbers of people. They also had little interaction and would not allow us to extract knowledge from them that could be applied to games which require a lot of interaction. At this point we returned to our post-it note board of ideas in hopes of finding a winning concept.
We decided to continue with an idea that fell between democracy and dictatorship; an idea we called Vote for your DJ. Vote for your DJ meant that the party goers would be able to select someone from amongst their ranks who they believed had good taste in music. But how could they do that? How could they find out who has the best taste in music amongst strangers? And if they knew each other, how could they make an unbiased choice?

The answer we found was that they had to vote not for a person but for his actions and choices.

### 5.5 Prototyping

To flesh out this concept, we used some of the other ideas that popped up in the focus group. The main components for this concept became: smartphones, a shared screen, the ability to queue songs and the ability to “Like” the song currently playing.

The smartphone would be used as the main device for interaction. Using the smartphone, party goers would be able to queue songs to the playlist. Voting for someone would be done through showing that they like a song by pushing a “Like” button also using the smartphone while the song is playing. The amount of people that like a song would be translated into points for the person that queued that song. The shared screen would be used to display information to the entire party like which song is being played.

At this point, before implementing the system through a hi-fi prototype, we wanted to keep working with low-fi paper prototypes so that we could make adjustments easily. A sketch of the smartphone interface was made along with an explanation of how the system would work (see Figure 5.14).
Figure 5.14 Concept sketch and explanation.

Figure 5.15 shows a storyboard that illustrates how this system would look like from a non-technical and social point of view. The sketches and storyboard were used to get some feedback before starting on the production of an interactive prototype.
The overall response was positive to the idea but the main issues that people brought to our attention revolved around social behavior. “How can you stop it from becoming a popularity contest?” and “How will you motivate people to queue songs?” were two of the biggest concerns. To address the popularity contest issue we decided that while we will display the name of the song that is currently playing, the person who chose that song should remain unknown. This way the “Like” that song would get would be genuinely aimed at the choice and not the person behind it. The leaderboard displayed on the shared screen was our way of providing motivation. Figure 5.16 shows screenshots of the mobile interface and shared screen.
Before going into the first interactive user test some changes were made to this prototype. The mobile interface and the shared screen were given a unified visual appearance. The leaderboard went through some discussions and changes as well. The leaderboard was meant to motivate people, but with the way our system of choosing songs worked, we risked demotivating those who were not on the top of that leaderboard. The problem appeared when we randomly allocated points to see how the leaderboard would look. When noticed that there were huge gaps in the amount of points between some people. We realized that these gaps could potentially demoralize those with the lower amount of points and cause them to give up on hearing their songs played and stop queuing songs. The points were cut from the next version of the prototype and the leaderboard was reduced to only show the top five instead of the top 10. This decision was made in relation to the scale of our tests. Knowing that we could not test on large crowds of people within the scope of this project, the top 10 would probably account for half of our test participants if not more. Not seeing themselves in the top 50% of the crowd would also demoralize them from participating. By showing only the top five we allow all the participants who are not on the leaderboard to believe that they could be number six and just on the verge of joining the top five.

The last issue we had to deal with before moving on to testing was figuring out the best way to sort the song queue. We needed to decide on a sorting algorithm which we would follow during the tests. Seeing as the leaderboard promoted competitive behavior, we needed an algorithm that rewarded the top participants but also gave others a fair chance.
5.6 Testing the Prototype

The prototype that we tested had the ability to register song requests from users as well as “Likes”. It could not however, play the songs itself or sort through the song queue using the rules we’ve defined. This meant that we had to employ a wizard of oz method for our tests. Figure 5.17 shows how we divided the prototype into a front stage and a backstage. Everything the users would come in contact with and interact with was part of the front stage and had to function in accordance with the user’s expectations. This included the smartphone interface (a mobile webpage) and the shared display. Everything in the backstage could be manually handled while still giving the user’s the same experience that an a fully functional and automated system would give. The backstage included receiving input from the users (song requests and Likes), sorting the song queue, playing the music, scoring the users and updating the shared display with the correct information.

![Prototype division for wizard of oz test.](image)

**Figure 5.17** Prototype division for wizard of oz test.

5.6.1 First test of *Your DJ*

The first interactive test of our music selection system was conducted in the offices of Massive Entertainment on a Friday near the end of the workday and lasted a little over two hours with ten participants. The prototype used was called “Your DJ” and can be seen in Figures 5.18 and 5.19. For this test the participants were given the instructions in advance and were able to request songs before the start of the test (See appendix 8.3 for the instructions).
Figure 5.18 Your DJ shared display.

Figure 5.19 Mobile interface for Your DJ.
Since we already had a list of requested songs at the beginning of the test, this is how we sorted the song queue:

- Following a first come first serve rule, each participant got their first requested song played.

- After the first nine songs were played (one for each participant), only the top five participants got their songs played.

- One song by each of the top five was played in ranking order and when one of the top five didn’t have a song; one of the lower ranking players’ songs got played.

![Shared display during the 1st test](image)

**Figure 5.20** Shared display during the 1st test

### 5.6.2 Results of the first test

Over the course of this two hour test 35 songs were queued out of which 25 were played and the “Like” button was pressed 91 times. We noticed right away that the participants quickly adopted the competitive aspect of the system. They kept track of the leaderboard and took pride in being on top. After the tests the participants all agreed that they enjoyed the competition and the overall opinion of the experience was very positive. They enjoyed the mix of musical genres and they liked the anticipation leading up to hearing the songs they chose being played. When asked about what kind of songs they had selected, most of the participants said that they chose songs that they liked but also felt that others might enjoy. Worth noting is the fact that most of the songs played were already requested before the start of the test. One of the participants requested a more popular song in hopes to get more “Likes” after his earlier songs had proven not to be so popular. The participant that was the 1st on the leaderboard took advantage of his lead and queued two songs. He admits that at least one of them was chosen simply because he wanted to listen to it, not because he thought others might enjoy it as well.
5.6.3 Second test of Your DJ

For the second test we improved the mobile interface with bigger and more visually appealing buttons as seen in Figure 5.21. The backstage was also improved and became more automated to help us conduct the tests more easily. Sorting the song queue and playing the songs was still done manually but calculating the scores and updating the shared display now required the simple push of a button.

![Figure 5.21 Improved mobile interface for Your DJ.](image)

The biggest change in the second test to the user experience was in context and execution. The Second test also took place in the Massive Entertainment building, but in the Kitchen/lunch area this time. The test started at the end of the workday and lasted two hours. The number of participants was not predetermined as the invitation to participate was extended to everyone in the building as well as a few guests. The participants could drop in and out at anytime during the two hours. No instructions were given in advance other than the time, place and the fact that music would be involved. The test would start with an empty playlist and participants would queue songs during the test. The 1st participants to arrive would receive the mobile web page address from us. Any others would have to ask the 1st to arrive for it. In this manner we force the participants to socially interact with each other while simultaneously providing them with an icebreaker.

The way we sorted the song queue was also modified:

- The first time anyone requests a song, that song is moved to the top of queue and played right after the current song ends.
- The top participant (The top DJ) would get up to two songs played in a row. The rest of the top five would get one song each in order. This process would repeat.

- When there are no songs by the top five the other songs in the queue would be played.

- When the other rules don’t apply, we follow a first come first serve rule.

- When one of the top five DJs was inactive for a long period or has left, that DJ’s score was reset.

5.6.4 Results of the second test

While external circumstances prevented the test from having as many participants as we had hoped for, we still had eleven participants as well as some others who did not actively participate. During this two hour long test, 26 songs were requested and played and the “Like” button was pressed 42 times.

As planned, the first two people to arrive asked for the web address and started by requesting songs. We explained to them that other people would probably look to them for instructions. We observed as those two started to invite others to join in and explained how everything works. When a guest that we had invited arrived, he wasn’t familiar with any of the other participants. After introducing himself to one of the others, he asked for the web address and shortly thereafter a small group had formed in front of the shared display.

The competition was not as prominent in this test as it was in the previous test and participants were more casual and social than focused on being “top DJ”. Participants still picked songs in a similar manner; songs that they like and believe others might like as well. Overall the reactions to the concept were very positive.
5.7 Connection

Over the course of this project, we’ve given a lot of thought towards the issue of connecting people in the situation we’re in. We’ve always thought that in a social game that relies on the players sharing the same physical space, logging in with a username and password and joining the same game as others seemed artificial and disconnected from the context. In response we’ve explored the notion of using the context of the game or activity and the shared physical space to establish connections between people.

The examples mentioned in section 3.4.2 gave us some suggestions in this direction. The methods used in LBMGs emphasized the location over the players and as a result no real social interaction occurs between the players as they connect. The Game Link Cable used to connect the Game Boy handhelds was interesting but was constrained due to requiring a physical cable that remained connected. Our opinion of the current Nintendo StreetPass as a way to trade items and other game data is that it removes all contact between the players and with it the excitement of the connection.

The real inspiration and possible solution came from S Beam and Bump. These methods provided a simple interaction that could occur between players even if they are not familiar with each other. S Beam might feel a bit awkward as it might force the player to hold the phone in an awkward manner to get the back side of the phones to touch (Figure 5.24). On the other hand, after using Bump on multiple occasions over the course of this project, we found it fun to use as it the interaction was akin to fist bumping which is familiar as a greeting. However, Shot pointed out that the simplicity of Bump might be a weakness.

These thoughts gave birth to the idea of using a Bump-like interaction to perform secret handshakes of varying complexity as seen in Figure 5.25. The secret handshake should not be considered a password.
Figure 5.25 Example of a secret handshake.

While this concept was not fully tested alongside our Your DJ prototype, the social interaction this concept would force on players was tested as mentioned in sections 5.6.4 and 5.6.5. The ideas discussed by Clay Shirky (section 3.4.1) can be applied to the use of the secret handshake to spread a connection in a large group of people as illustrated in figure 5.26.
Figure 5.26 Spreading a connection with the Secret Handshake.
6 Discussion and conclusion

6.1 Discussion & Analysis

In this paper we aimed to explore two issues that arise when large numbers of people play games together in public or semi-public spaces: Making choices or selections as a large group, and creating meaningful connections between the players and delivering feedback to them. These issues appeared after we had studied a few topics including the current state of videogames and cultural convergence. This led us to imagine a near future where a combination of smartphone technology and shared displays would be used to create games in public spaces that involve large numbers of players.

Choosing music selection as a context from which to explore our research questions was a very important part of our process and was not a decision we took lightly. The context had to allow us to gain knowledge that could be extracted for use in any game that involves large numbers of people in semi-public or public spaces. Another issue we had to deal with was confidentiality with Massive Entertainment, which is why we needed a distance between our context and their game. While making a game that fit those requirements would have been quite interesting, the amount of time we had did not allow for it. We also did not want to fall into the trap of putting too much focus on the game itself and straying from our purpose. Music selection was an issue that already existed and we had come across several experiments in collaborative music listening that this was the context we were looking for.

Our most robust prototype incorporated ideas from our literature studies, field studies, focus group and the feedback to the other concepts. Our goal was to explore the different aspects that are important to making selections in large groups. Your DJ started as a way to allow the person with the best taste in music to have more influence over the playlist than others. If we take this idea out of context it would be “allowing the person with the best judgment to make the most choices”. The biggest problem with voting was the fact that in large groups of people, most people don't know each other. In this situation, people have more acquaintances in the group might have an advantage. We needed to emphasize the importance of voting for the choice itself rather than the person. This led to our first important design decision: Hiding the identity of the person who chose the song.

Participation was also an important element in making selections. As the number of users grew we needed to make sure that they all felt that they mattered. One of the ways we showed that was by making the votes or “Likes” visible on the shared display next to the name of the song playing. On the other hand, by hiding the identity of the person
who chose the song, we took away something that showed user participation and we had to compensate for it. That is where the leaderboard on the shared screen came in.

The leaderboard turned out to be a much more integral part of our design than we had originally expected. At first glance putting up participant names on the shared screen emphasizes user participation and draws the attention of others to the way the music is being selected. The leaderboard was also intended to motivate people to actively participate in the selection of music. Drawing upon very basic idea of competition as a category of games as introduced by Caillois (2001), the addition of a leaderboard created competition between the participants and created a kind of game from something as simple as choosing music.

The shared screen, or the leaderboard, also served the purpose of identity expression and impression management, as discussed in chapter 3.4.3. The same way that a request to a DJ for a song conveys social meaning and opens up for discussions, the leaderboard is also eliciting such mechanisms by portraying the main contributors. Even though the leaderboard wasn’t showing who selected what song it was still enough information to credit the songs played to the first names on the list.

*Your DJ* implies that the participants themselves choose who to give the most power and they do that by giving “Likes” to the songs they enjoy. This allows for everyone to be part of the choice; either by choosing songs or by empowering those who do choose songs through liking their choices. A positive outcome of this design was that it pushed people to choose songs that they liked and that others would also like. This was exactly the type of behavior we wanted to promote. What made us curious though was that even the most competitive participants were “Liking” other people’s songs, in essence helping their competition. While that behavior is certainly positive, we can’t guarantee it as a result of our design and further testing is needed to find out how to ensure that kind of behavior which can be compared to good sportsmanship.

While “Likes” were the most visible input we got from the participants, we quickly realized that they can’t be the only factor in the determination of which songs to play. Following the “Likes” only would give the first participants an unfair advantage. To counter that we started looking for rules that would even the playing field and ensure that those at the top of the leaderboard really deserve to be there. Things like playing one song for every newcomer ahead of the queue was a way to keep them motivated and give them a chance to catch up to others. The top participant or “Top DJ” only got two songs played in a row and then others had their songs played. We felt that would be more fair and better for the group as a whole. It would be interesting to us to testing the system with a change to only play the top DJ’s songs and see what kind of changes in behavior that would have. Questions like “how many songs will the top DJ queue before growing tired or bored?” and “how will that affect other participants’ enthusiasm and participation?” would be answered to some extent with more testing.
As this paper aims to find solutions that would benefit a scalable number of people, we anticipate a problem that did not appear in our relatively small scale tests. Our tests included eleven participants at most and lasted two hours, which meant that the total number of likes a song could have was low and the number of songs one person could play was relatively low. This meant that the difference between the top DJ and a newcomer was not very large. However, in a larger crowd and over more time that difference could be greater and more discouraging to newcomers. What we suggest to counter this unwanted situation is a form of score decay that would normalize scores yet still allow active participants to maintain a lead. The decay could be a decrease in scores over time which could be a fixed amount or one that is relative to how many songs a participant has had played. Another solution could be to use the “Likes” as a form of currency that would be spent to queue more songs. In this solution the songs need to be “Liked” at least as much as they cost to keep the leaderboard position. This would clearly require a lot of balancing and testing but could be another reason for participants to choose songs that many would like.

6.2 Self critique

Participants in the questionnaire and the focus-group were not equally of both genders as we had hoped. In order to balance this somewhat, we asked a girls DJ club to contribute to the questionnaire; but due to geographical restrictions they couldn’t make it to the focus group or the prototype tests.

A weakness in our working prototype was the way participants had to interact with it. Many felt that having to type song names was too much of a hassle especially in a party context, not to mention socially inappropriate at times. We propose easier navigation through lists as this would be better suited as well and would be needed if we were to test in a less controlled environment like a party. We also suggest using implicit interactions such as gestures like waving or shaking the phone to “Like” a song instead of a button (see figure 5.12).

This type of gesture based interaction was also considered in our connection concepts, but due to time restrictions it wasn’t fully tested. The secret handshake concept we arrived at was intended to both avoid the usage of the phone in a non social manner and as an embodiment of a greeting and introduction in a social context. Although the concept requires further testing and evaluation, we do believe that we have something interesting on our hands that certainly deserves further development. Issues with protecting the phones when bumping would certainly need to be dealt with. More time would have also allowed us to further develop and test the selection prototype on larger groups and in more social situations.

What we learned about the leaderboard through one of our earlier prototypes was its potentially demotivational effects. We mention in our design process that we noticed in an early prototype that big differences between scores could have a demoralizing effect.
on people with low scores. Because of that we decided to remove the score from the leaderboard and only show the names. The number of names shown on the leaderboard was also decreased with the intention of allowing more people to think that they are close to being on the leaderboard. However, in one of our tests where there were only ten participants, one of the participants expressed that he gave up after not seeing himself in the top five in the first hour of the test. He stopped choosing songs completely. This leads us to believe that the number of people shown on the leaderboard should reflect the number of participants according to a specific ratio.

6.3 Conclusions

The question we set out to answer in this paper was “How do we design interactions that coordinate a scalable number of people in the context of social games in public spaces?” which included making selections as the main issue and making connections and delivering feedback as secondary issues. While this question is impossible to answer in a clearly defined way, our work has allowed us to identify several elements that should be considered when designing for the context of social games in public spaces.

When it comes to making selections, we found the best course to be rotating the power of choice between people who the group supports. In this way we empower the group as a whole and not just the individual making the choices. It is also important that the group chooses people amongst them based on the choices these people make and not who they are. By doing this we promote a behavior of making choices that benefit and please the group and not just the individual. By using game design elements to instill the spirit of competition into the selection process, we intensify the aforementioned behavior. We create a situation where people compete in who makes the choices that please the group the most.

To put it simply, by making selection a game and aligning the individual’s goal of winning the game with the ultimate purpose of making the best choice for the group, we can design a selection system that serves its purpose and is engaging.

When designing systems for scalable numbers of people, we found it important to tie some elements of the design to the number of people participating. The larger the group of people the harder it becomes to allow them all to participate. Seeing as the feeling of participation is important in a game, a good scalable system needs to be prepared to deal with those issues.

As for the issue of connection, we believe that connections should occur between the players themselves and not between the players and the game as is the case in online video games. In the context of a social game in a public or semi-public space it is important to make use of the shared physical space when designing a connection between players. Connections that force a physical and social interaction between
players become more and more important the as the number of players increases. Giving each player at least one meaningful social connection to another player ensures that a social game in a public space is truly social.

The last part of our research question was how to deliver feedback to many people. In 3.2 we discussed the pros and cons of using different size displays. In collaborative music listening we talked about the ability of music to influence social agency and how publicizing musical preferences can create a scene for social ‘occasioning’. So, while we could have let the users access the same data that we presented on the shared screen on the phones; it wouldn’t have had the same impetus on these social factors. Another advantage to the shared display is that the idea builds upon participation; and for new visitors who are unaware of what is going on, the shared display work to be an intriguing way of communicating the purpose.

6.4 Future Directions

A question that has been a concern for us from the start is how knowledge created through context-specific research can be disseminated and applied to other problem areas. Although we do not expect our work to create one proven solution or tool for all recurring design problems within this field, we hope to contribute to the understanding of the emerging field of social digital games. In a strictly theoretical and academic sense, research is striving for solutions that can be reused by others or by oneself in a range of contexts. For a designer working with people and subjective experience, the epistemological value derived from this work is more oriented towards inspirational patterns, and the capturing of some core elements. These core elements, some of which are participation, motivation, competition and self expression, as well as the algorithm for the rules of what to play next, constitutes a repertoire of aspects that could be meaningful when designing for other social games and play.

The heart of our design work is transferability, as it was developed to be reused by the Massive Entertainment game. It could however possibly, with modifications, work either as a stand-alone product similar to the examples in figures 3.26-32; or as a plug-in to an existing music application. It would also be interesting to see the conclusions of our work used in a future game project.
7 References


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8 Appendix

8.1 Ideas from the focus group

The following is a selection of some of what we had found as the most intriguing, simple, brilliant and extraordinary concepts that people suggested.

A system that measures shout-outs and react on those

A touch screen with a built-in computer where anyone could go and queue up a song, this way the host at a home party wouldn’t need to let people near his/her private music device

A tool for the DJ at a club, a system of a suggestion, not fully automated

Some kind of visual communication system, like morse code, that could facilitate the communication between guest and DJ for example exchanging information about what is played; as it is difficult to communicate with the DJ when the music is loud.

An ambient, dynamic system that would adjust to the energy level of the party over time; one that measures activity and adjust to that in terms of song selection.

A display showing the next song to be played at the club, for the guests to be able to plan what to do, go to the bar or to the dance floor; or as a tool for the DJ to attract people to the dance floor, or keep people there, by showing them what song is coming up next.

A “Like” system, where people could show, explicitly or implicitly, that they enjoy a particular song. Here, participants suggested everything from virtual lighters in the air, jumping high, or shouting.

A suggestion system as a tool for the DJ where guests wear arm bracelets with shifting colors to communicate their liking of a song.

Human playlists - instead of voting for a specific song or artist, you vote for a person because you trust this person to have a good taste in music.

8.2 Questionnaire results

The questionnaire results were too large for print but are available online at:

https://docs.google.com/spreadsheet/pub?key=0AiCfnsEAv7NdDNkZ1FWdWpDb2NMWnNoVWx6Tk1weXc&output=html
8.3 First test instructions

YourDJ Music Selection Test

We’re going to be testing a music selection system that allows for songs to be selected by people with good taste. Here’s what you need to do for this test:

Before the test:
- Open your phone’s browser (PC is ok too before the test).
- Visit www.corianes.com/yourdj
- Tap “Request a song”.
- Fill in your name, song name and artist.
- Submit! (One song is enough 😊)

During the test:
- Revisit www.corianes.com/yourdj on your phone.
- Music will be playing during the test. If you like the song that’s currently playing, tap “Like”.
- You can still request more songs to be added to the playlist by tapping “Request a song” and filling the form.

Remember to “Like” a song if you do like it.

If the others “Like” your songs, the next song you request will move up the queue.

The shared display will show the name of the song that is now playing and how many “Likes” it has gotten so far. Here you will also see a leader board showing the top 5 “DJs”, meaning the people whose songs have gotten the most likes. The higher you are on the leader board the higher your songs will go up in the queue.