Serious Beats: Transdisciplinary research methodologies for designing and evaluating a socially integrative serious music-based online game

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ABSTRACT

Recent studies show that the second generation of migrants is not adequately integrated into mainstream society but tends to segregate into secluded segments. 'Internet Use and Friendship Structures of young migrants in Vienna: a Question of Diversity within Social Networks and Online Social Games'[1] is a transdisciplinary[2] research project with the objective to create a serious music-based online social game, which firstly is intended to be a positive impact game with the purpose of furthering integration and encouraging the manifestation of meaningful multiethnic relations. Secondly, the game shall make social interaction observable for evaluation. This paper gives an overview of which methodological approaches can be combined in the phases of the game's design process and shows how the mutual embedding of game design researchers and social scientists works in this context.

Keywords

Serious games, music-based games, social games, methodology, game design, social sciences.

INTRODUCTION

Based on recent studies it has been shown that the second generation of migrants[3] is not (or not adequately) integrated into mainstream society (see e.g. Thomson & Crul 2007). The second generation tends to segregate into secluded segments and in groups disenfranchised from their surrounding societies because of the socio-economic and political conditions they experience in their countries of settlement (Franz 2007). However, the second generation of migrants in Austria frequently does participate in online platforms and games (Götzenbrucker & Franz 2010). Based on preceding research this project aims to design and develop an online game tentatively titled Serious Beats. The goal of the project is to show that a game specifically tailored to an audience in Vienna, Austria can have an impact on the social behaviour of teens aged between 14 and 17. The approach of designing a game that encourages social interaction promises great potential of overcoming the described fringe group building processes. Jenson and Castel (2009) state that nowadays *"play is very much situated within a broader network of actions, actors and activities which are community-based and supported"*. Music has been determined to be suitable for both cultural self-expression as well as social bonding (Solomon 2009). Therefore the core gameplay of Serious Beats will be about "playing music" (Kayali & Pichlmair 2008) in a social community context.

"Internet Use and Friendship Structures of young migrants in Vienna: a Question of Diversity within Social Networks and Online Social Games." is a transdisciplinary research project based at the University of Vienna's Department of Communication in co-operation with the Institute of Design and Assessment of Technology (Vienna University of Technology). The project's layout is to use a social sciences approach to research the conditions and expectations of youth in Vienna to create a basis for the game design of Serious Beats. The team will then engage in a collaborative game design process and formulate a design draft. The game will be developed by an external partner and the game design will be fleshed out during the process of development.

This paper gives insights on how social scientists and game designers may collaborate methodologically on the design, implementation and evaluation of a serious game set up to positively impact a defined local target audience. As of writing this paper, about 100 qualitative interviews have already been conducted, there is a game design draft and development is about to start. We present reflections on the design process and give an overview of the analysis and evaluation of the project.

The positive impact game 'Serious Beats'

Without doubt Serious Beats is a game that falls under the umbrella term of serious games (Abt 1970). Several classifications splitting serious games into smaller sub-genres exist, into some of which the project's game fits better than into others. It certainly has some aspects of political and educational games (Michael & Chen 2006) when regarding the aspect of raising social awareness. The game ideally would foster an understanding of different cultures and thus teach that living together also means interacting, communicating and learning about each other's culture and habits, in order to not only tolerate but accept one another. Using Ratan & Ritterfeld's (2009) systematization of serious games this means that the game puts an emphasis on the primary learning principle of social problem solving. Serious Beats' primary goal is to take this principle one step further and to actually trigger social behaviour change. This means that it can also be placed within the genre of persuasive games (Bogost 2007). Regarding persuasion there is of course the question of being obvious about the designers' goals in the game (e.g. by making these the game's goals, too). In Serious Beats, we decided to explicitly

show the potential of intercultural friendship through the game but not to force players to become friends with specific players. The objective of Serious Beats is to let players experience intercultural relationships in the confined and voluntary setting of a game. The goal is that these experiences not only lead to the formation of so called pick up groups (Lina & Magnus 2010) that have weak bonds and a low level of social interaction but also translate into changed and sustained social behaviour in the real world. As such the term 'positive impact game', coined by Jane McGonigal (2011), seems like a good choice of genre.

The game will allow players to imagine and create new ways of interaction, acculturation and mutual understanding within the context of cultural diversity. And what better metaphor there is than music to illustrate the process of acculturation. Preceding research has shown that music-based games (Pichlmair & Kayali 2007) can be designed to support socially engaging concepts like "play as performance" and "kinaesthetic play" (Kayali 2009, Kayali & Pichlmair 2008) allowing people to play music together and show off their skills. The past popularity of games like *Guitar Hero* (Harmonix Music Systems 2005) and the current trend of dancing games build on these concepts. *Just Dance 2* (Ubisoft Paris 2010) even outsold the latest iteration of the best-selling *Call of Duty* (Treyarch 2010) franchise (Cowan 2010). Since then, the music-based genre has evolved further to embrace social online concepts, with music mini-games on Facebook artist fan pages trying to serve different patterns of media behaviour of their fans. The Facebook game *Nightclub City* (Brokenbulb 2010) attracted more than 20 million active players (Bozek 2011). Social music applications on the iPhone build on players' desire to make music and share it with their friends. The flute app *Ocarina* (Smule 2008) and the auto-tune singing app *I am T-Pain* (Smule 2010) even feature – as their main interface – a globe that shows where on earth people are playing the game at the moment and allows others to listen in.

Considering the described preconditions from social sciences and game studies, the objective of this project is to create a serious music-based online social game tentatively named Serious Beats that serves two purposes. First, it shall be a positive impact game with the purpose to further acculturation among Austrian second generation migrant youth (mostly with a Turkish or Balkan region background) and to encourage the manifestation of meaningful multiethnic relationships and groups. Second, the game shall make social interaction and group building processes observable and thus traceable for research and evaluation.

Serious Beats is a social online listening collective on Facebook where players interact with each other through music. Players gather in clubs filled with music. By fulfilling challenges like DJ Battles, music recommendations, recruiting other players and making choreographies, players can level up individually and as a group (a club). To complete challenges players select music videos from Youtube and present them to the other players in their club. Individual success in the game is based on recognizing trends and on having a broad understanding of music styles. Group success is based on players working together and reaching a consensus. Individual success always is capped by a group's overall progress. An alternate reality part adds additional challenges, external rewards (e.g. a live performance) and real world interventions (parties, events and workshops) that are tailored to the game's Viennese youth target audience. The game will be played by Viennese youth for three months in early 2012.

OVERVIEW OF INVOLVED RESEARCH METHODS

The research group's perspective and consequently the approach of this paper are shaped by the authors' diverse scientific backgrounds that involve media and communication studies, game studies and design, political science, HCI research, computer science, cultural anthropology, and social network analysis. The presented methodology includes elements of game ontology, criticism, serious games, persuasive games, game sociology, ethnography and game design theory, thus spanning most of the areas for computer game studies as described in Bogost et al (2005) and extending into methods of the social sciences (Corliss 2011). Dissemination of the project's results will be pertinent to several areas; the design and research methodology, which is focused on designing serious games for research, is relevant to game studies. The results of the qualitative study are relevant to social science and ideally to Austrian politics, too. A post-mortem on the collaboration with an independent game studio shall further the understanding of how academia and game industry partners can work together successfully.

One difference between the social sciences approach and the game studies/game design approach that are merged in this paper, is that the former is focused on players while the latter is mostly centred on the games themselves (Aarseth 2007). The paper gives an overview on which methodological approaches can be used and combined in respect to the phases of a game design process as defined in Crawford (1997). In what follows we give a short overview of the design process steps for Serious Beats. The next section will then give details on each of these steps.

Design Goals

The design process starts with exploratory field work (ethnographic design, participant observation, interviews and Internet search) and focus groups with potential gamers of Serious Beats. The insights are intersected with principles of persuasive and serious game design to define the design goals of the game.

Research and Preparation

The games mentioned in media interviews (youth giving examples of what they like to play) are subject to a 'playing research' (Aarseth 2003) and qualitative content analysis approach. Interviews with music experts (ethnomusicologists, musicians and DJs) give insights into diverse music and teen cultures. The combination of insights from the interviews with the authors' research on design principles of music-based games (Kayali 2009, Pichlmair & Kayali 2007) forms an adequate basis for the game's sound design. Explorative design (Ehn & Löwgren 2004) and a 'design as research' approach (Burdick 2003, Stapleton 2005) are used to find the forms of musical interactivity best suited for the game.

Design, Pre-Programming and Programming

Youth interviewed in the media interviews are involved in a participatory design session (Purgathofer 2004). The results are compared to the insights from a workshop and interviews with game design experts. The most promising designs are tried out in light-weight (LaBounta et al 2007, Ruberg 2006) analogue and digital prototypes (Fullerton et al 2004) consequently leading to a design document and the specification of a functional prototype. This prototype is subject to focus group testing (evaluated from both a game design and social sciences perspective). Jenson et al (2009) report on the success of iteratively play-testing a music game for learning with large groups of kids.

Gaming Phase

Qualitative semi-structured media interviews are conducted with about 100 teenagers in Vienna aged 14 to 17 years, two thirds of them with a migration background (Turkish and other roots). 50% of those teenagers will be invited to play our Serious Beats game and the entire sample group will be interviewed once again after a three month gaming phase to investigate the differences in the teens' *ego networks* (see Burt 1984 and Fischer 1982) and ideas of diversity. Within the game the teens will cooperate and collaborate in groups to win a DJ award. This kind of action research not only has effects on gamers' intercultural (music-based) understanding but also produces data about gaming itself. A so-called 'whole network analysis' (Burt 1992) will be conducted regarding the game: Firstly networks of the gamers, secondly networks of the used game items (so called affiliations networks). On the one hand we will be able to analyse the gamers' networks and changes of network sizes as well as quantities and qualities of relations and clusters of protagonists, bridges between protagonists or structural equivalences of protagonists. Additionally, the 'ego network analysis' of gamers and non-gamers will provide insights into the personal social integration, inter/intra-cultural friendships and embeddedness of the teens (Fuhse 2009, 2010). This data will be compared to that of an earlier study (Götzenbrucker 2001) on virtual worlds, social networks and group building. Additional quantitative data on the gameplay itself will be gathered through metrics (Swain 2008). The qualitative data from the network analysis can then be intersected with the quantitative metrics approach to produce insights on the interplay of gameplay design and social dynamics. A social anthropology perspective might be added through participant observers embedded in the gameplay (see ethnography and game studies, e.g. Boellstorff 2006).

PHASE 1: DESIGN GOALS

Exploratory field work has been conducted by visiting youth centres across Vienna to talk to youth and youth workers. Furthermore, various local Austrian online communities have been explored. We found that music can enable the creation of new relationships among youth. For example, it was found out that a series of intercultural DJ workshop were organized that led to the formation of a multiethnic DJ collective that is still active although the project it originated from has long ended. The City of Vienna also sponsors a series of hip hop culture events called "Ich bin Wien"[4] ("I am Vienna"), with the goal of furthering a new Viennese identity by bringing diverse cultural influences together in music events. Not incidentally the research grant by which Serious Beats has been funded is called "Identity–Diversity". These examples show that the mentioned process of acculturation could be used in the game by making a game on the DJ and remix culture that is known to produce mash ups of diverse musical cultures. Actually, these examples also show that the city of Vienna is actively interested in integrating the 2nd generation of migrants.

Research on serious games has opened up a diverse spectrum of genres ranging from provocative game art to game-based learning and the aforementioned positive impact games. Serious games have great potential to raise awareness to issues and to have short and mid-term impact on player behaviour but little is known about their long-term influence on players (e.g. see Clark 2007, Klimmt 2009, Kato et al 2008 and Peng et al 2010).

Consequently this means that an interesting aspect of Serious Beats will be to see if the game's alternate reality part can help translate short-term friendships and acquaintances into long-term relationships and sustained acculturation.

Based on the project's goals and these first insights the following design goals have been discussed. Design goals are used to test new game ideas by checking if they contribute to reaching these goals. Firstly, there are design goals that directly relate to the project's research goals:
• Foster integration among youth with a mixed ethnic background.
• Foster the emergence of persistent social groups and real world friendships.
• Make integrative and group building processes observable.
• Put a special focus on attracting the local Viennese audience.

Secondly, there are design goals that are shaped by the game design approach. These are more specific and should also support the above research goals.

• Create a social, playful and engaging environment.
• Create a game that is equally appealing to both genders and different ethnicities.
• Allow players to develop distinct virtual identities.
• Allow music to be a means for communication.
• Create an environment that works both as a community hub and a game.
• Make the game work also if only 50 players are playing. (50 is the smallest possible number of players should absolutely no one other than members of the observed group play the game).

PHASE 2: RESEARCH AND PREPARATION
The project's central research question is "Can an online social music game allow Viennese teenagers to change their understanding of cultural diversity in order to overcome cultural/ethnical boundaries? Can the game not only help to integrate teens with a migration background into the mainstream society but also generate knowledge about and acceptance of cultural diversity among those without migration background? If yes, how does it work, if no, why not?"

Qualitative semi-structured media interviews (round 1)
Methodically, the project is based on 48 semi-structured personal media interviews (conducted twice, interval one year) with 16 female and male teenagers with Turkish roots, 16 with Eastern or Southeastern European as well as North African backgrounds and 16 without a recent migration background. Additionally, students conduct another 48 interviews using the same questionnaire. The interviews of the first stage cover their attitudes towards friendship, identity and diversity, their media and especially Internet use as well as their music and games preferences. Those interviews are used to aid us in taking decisions regarding the game design. Thus the game design is based on a social scientific study.
All researchers in the project work together in every stage of the project. This means that not only social scientists but also computer scientists and game design researchers have (and will) conduct interviews and thus foster insights and in-depth knowledge for everyone. The results of the interviews have been discussed by the entire team, which especially helps to deal with the bias created by being grounded in a single research field. Of course, the interview questions, too, were discussed before the interviews and everyone contributed input that was included in the questionnaire. Consequently, all of the scientists also participated in the game design draft and in discussions about the game design.

Results of the first wave of interviews

Only a choice of interview results[5] can be covered here due to the limited amount of space. So, we present the results most important for game design decisions. As a matter of fact the analysis of the interviews is not finished yet because of the vast amount of data. Therefore we cannot currently quote percentages. We tried, however, to touch briefly upon and hence consider every interview.

Music

Interviewees mainly listen to well known, international music. They prefer songs that are chart listed. Only a few listen to local Austrian acts or ethnic music. This means that they have got a lot in common regarding their musical taste.

Listening to music is something they do almost all the time: at home, at school, in parks, with their friends or families, alone. They often talk about their favourite music as well as new music with their peers. Many state that they choose music to suit their mood as well as in order to relax.

Most of them use Youtube as their main source of music. They even download music from Youtube (completely disregarding quality issues). Often they store mp3s on their mobile phones, using them as mp3 players. Some even use their mobile Internet access to listen to/watch music on Youtube instantly. They primarily use headphones when they are out, but sometimes also their mobile phone's speakers (when sharing with their friends). At home most of them use their computers and Youtube, as well. Very few use CDs or CD players.

On Facebook they frequently share Youtube videos of favourite or new music.

Regarding musical styles rap/hip hop is the clear favourite, with pop/R&B and electro/house being runners-up. It is also worth mentioning that the interviewees hardly ever listen to pop or electro by artists not internationally well-known, but they frequently do listen to German language rap or rap from their parents' home countries. Only some teens also listen to other styles of music (e.g. arabesque, classical, religious) associated with the countries or cultures they are rooted in.

Identity and diversity

78 per cent of the interviewees are Austrian citizens and/or born in Austria. Despite this fact, in regard to their family's origin ("migrant identity"), Austrian or other identity most speak of two shared identities: In some situations they feel more Austrian or Viennese, while in others they feel more Turkish/Bosnian/Croatian/Serbian/Egyptian and so on. Only some refuse to even make the split between Austrian and migrant and insist on being "something else". There are very few that refuse to identify as Austrian and very few that refuse to identify as Turk/Bosnian/Croatian/Serbian/Egyptian etc. Traits for identity are, among others: Language, (school) education, friends, families, culture and religion.

When asked about diversity and chances of living together on good terms many of the interviewees state that there indeed are problems due to diverse cultural/ethnic backgrounds of Viennese. While migrant teens mention racism as a challenge, teens without migration background focus on the job and housing situation, which they experience as difficult. On the other hand, many interviewees also feel that diversity and multiculturalism in Vienna are a clear advantage for all Viennese and Austrians. Those who view diversity as disadvantage usually dub it a disadvantage for "natives" only, as they think that "foreigners" take resources from them. (e.g. jobs, apartments, money via social benefits).

Racist might be too strong of a label for the interviewees without a migration background, but there are issues regarding migrants (whom they often call "foreigners", which is a common usage in Austria)). Basically, the Austrian interviewees without any

migration background think migrants are responsible for problems regarding job and housing situation. Still, only very few indicate that migrants often or generally are criminals. This attitude might be a result of Austrian populist politics, where nobody talks about the benefits of migration for Western societies.

So, our game is designed to tackle prejudice and instead bring together teenagers, to show them what they have in common and widen their horizons in a playful, fun way.

Games

Our interviewees play a wide range of computer and video games. Apart from well-known, internationally distributed games (which they actually download or copy rather than legally buy), they are mainly into casual games—often, but not exclusively, on Facebook. Casual games are popular because they provide distraction easily and fast. Those who are more into gaming, on the other hand, generally prefer longer lasting games with levels, missions, achievements and so on.

Many teens like to play together with their peers, either meeting up to play on a console or playing multiplayer games online—at home or in Internet cafés. Being able to play together is a large benefit of any game for most interviewees. Many play music games (SingStar, Guitar Hero etc.) together with friends and family, few play them alone.

We also asked for ideas regarding the game we are designing. Interviewees' ideas covered a wide range, matching individual gaming preferences and tastes. Among them were: DJ-ing, rapping, composing, dancing, tournaments or musical battles (voting by audience), acquiring knowledge about music, playing together with others, playing alone, being able to buy things, levelling, having many alternatives, good graphics, diverse music, including current hits.

Time spent online / gaming

Analysis of results for time spent on the Internet as well as time spent gaming shows that girls do indeed play less computer and video games, but there is no gender difference regarding Internet use and time spent on the Internet. That is why the game we designed (so far) is an extension of widely used social networks Youtube and Facebook rather than a "classic" game. Engaging their habits of listening to and sharing music using online social networks seems promising for our purposes.

Only about 20 per cent play rarely or not at all, 57 per cent play more than four hours a week. Four hours is also the median for weekly playing, with the arithmetic mean being 7.3 hours (high standard deviation of 8.3).

By using music as a tie, the game we design will try to help Viennese gamers overcome cultural, ethnical and gender boundaries. Even though the game audience will not be limited to working class gamers, it is working class gamers who are especially in need of support regarding diversity of their contacts, because they are particularly marginalized. Often, their contacts are very homogenous concerning ethnicity and gender as well as locality (i.e. they have mainly friends who not only live nearby but also share the same cultural background and the same gender). The game's goal is to enable socializing of gamers of different backgrounds living in different Viennese districts. Musical styles focus mainly on rap/hip hop, R&B/pop and house/electro as many teenagers are into these styles. So the teens should broaden their knowledge about cultures present in Vienna and their acceptance should be extended that way.

Our "target community" are teenagers who spend their time in youth centres, middle school students ("Mittelschule"; lower secondary education level) and apprentices ("Lehrlinge"), as that is where working class teenagers in Vienna are found (bourgeois teenagers usually have tighter timetables and less leisure time, attend different schools

and rarely are apprentices). Firstly, we conducted our interviews primarily in the mentioned institutions. Secondly, we will also rely on contacts we have established to promote the game—once it is ready—in order to include more gamers than just the interviewees so that the game is more fun.

The game is also supported by "real life" activities such as workshops where the gamers can meet and are trained by scientists or social workers. Those workshops—which are yet to be designed (probably when the game is finished)—will use methods of group dynamics to strengthen the ties teenagers have forged in-game. Additionally, it might be a good idea to also bring up questions of identity to help teenagers deal with cultural diversity and find their own identity in a multicultural society. Methods regarding language skills (especially of teenagers with a multi-language background) could also be considered. Questions concerning the game can also be addressed in the workshops which may help promote it, too.

PHASE 3: DESIGN

With reference to preceding research (phase 1) and the qualitative study (phase 2) this section tries to explain game design decisions in context with music games, serious game design and the social study done for the project.

Qualitative examples and playing research

Interviewees showed a strong appreciation of dancing (a fact that is well aligned with the aforementioned overall popularity of the genre) and karaoke games. Playing these games emphasized the importance of music game features like performance (Pichlmair & Kayali 2007) and the possibility for (creative) self expression. There are several examples of easy online tools that allow mixing two Youtube videos and creating playlists[6]. Also mentioned were more complex software DJ-ing tools like Virtual DJ (Atomix Productions 2011) that point to possibilities for more depth in musical self-expression in easy-to-access playful environments. When asked about important features in music games and games in general we found that various options for avatar customization are requested and can further player identity.

There also are several examples for the emerging genre of social listening that has been mentioned above. The Facebook game Nightclub City (Brokenbulb 2010) builds on players creating clubs as a kind of hub and home base that can be customized and where popular music can be selected for playback during parties. The music service Turntable FM[7] which is still in a semi-open beta is particularly inspiring and has many commonalities with the concept of Serious Beats as described in this paper. Players take turns DJ-ing while other players that are part of the audience are able to vote a particular DJ off the stage.

Furthermore games like Jane McGonigal's Superstruct (Insitute for the Future 2008) show the potential of tackling real world problems through alternate reality games. Superstruct confronts players with future real world problems and lets them engage in a collective and creative problem solving process.

Music-based game prototypes

In this year's Multimedia Production lecture at the Vienna University of Technology possibilities for interaction with music were explored by having students create a series of music game prototypes. The concepts explored rhythm-based games, instrument games, interesting input methods like using a microphone to control an onscreen character and ways to combine music games with traditional genres like jump'n'runs or puzzle games.

In the study it was found that, while the appreciation for pure music games was lower among male interviewees, female interviewees are less engaged playing traditional games than playing online casual and social games. These two facts led to the assumption that producing a traditional music game in the sense of the prototypes that were created bears a great risk of losing large portions of both the female and male target audience. Insofar the relevance of the prototypes to the project was rather low. This problem arose because the timetable for the prototypes had to be aligned with the lecture schedule, so that there were no insights from the survey available yet.

Interface design prototype
The study gave a clear impression of one important social media core behaviour of youth in the target audience. All but two of them are on Facebook and Youtube is their primary source for music. Based on these insights and implementing an explorative design approach, an interface design for a music management game on Facebook has been developed. The idea was to make a game about playing the charts and investing in music videos found on Youtube. Much like in a fantasy sports game players would build portfolios of music and score points for recognizing trends and for fulfilling missions such as building culturally diverse music portfolios. The screen designs that were created helped us to understand the significance of developing not only a game but also a service; a service for social listening that enables users to listen to, share and communicate about music. The interface designs also helped to understand that the fantasy and portfolio approach itself is rather complex and might only be engaging to a select few. Still, what we have learned of this was the idea of integrating the game with a service for social listening that builds on using content from Youtube.

Social music charts sandbox
Several services exist that create online music charts based on formulas that measure an artist's and song's popularity across various social networks[8]. To experiment with this social aspect of music as an incentive for Serious Beats we developed our own social music charts sandbox[9]. It allows experimentation with a formula to rank Youtube videos based on plays, likes, features on Facebook or Twitter, etc. This helped getting a feeling for how music trends spread across various social networks.

Figure 1: an entry from the social music charts prototype's search results.

Design workshops

During the course of the third phase two design workshops were held where the project team members, both with social sciences and game studies backgrounds, were matched with professional game designers with industry experience to work on aspects of the design of Serious Beats. Following Daniel Cook's (2010) model that sees game design as a series of cycles that alternate between brainstorming and culling ideas, the first workshop generated several directions on where to take the design of Serious Beats. Among them was the idea to use Youtube videos and build on the social listening behaviour of kids in Vienna. This idea was then followed up during the second workshop that focused on aspects like the setting and specific game mechanics related to this concept.

The workshops also allowed the project team to leave the constraints of internal discussions and to take a fresh point of view on the game design. The concept of mutually embedding project members into important tasks worked well in this. Just like the game designers visiting youth centres, social scientists took an active role during the design workshops.

Addressing the local Viennese community

As game designers participated in the study and also visited schools and youth centres themselves, they gained a stronger understanding of what the kids do and where and with whom they are actually spending their time. With being somewhat embedded in the target group came an understanding that a local audience is an important constraint for the game design, but also a chance to tailor the game more specifically to this target audience

Consequently the team was looking for ways to use the game to tap into the real life of Viennese kids and to directly connect to their social and social media behaviour. Following Jane McGonigal's (2011) view on the potential of games to have real world impact, the resulting idea is that building an alternate reality game facilitates the transfer of relationships to the real world as they manifest themselves in a hybrid game space composed of the game world and its overlap with real world people, events and locations.

The game should empower players—not only in terms of game skills but also in terms of real world actions. Players will be given the ability to organize and participate in real concerts and parties, take part in DJ and audio recording workshops and also will be able to judge other players' performances. All these events and actions will be embedded and awarded in the Facebook part of the game. Thereby the game will be brought to life and in-game social bonds between players can be strengthened. The game is empowering, on the one hand, because it can be viewed as "their" room. They can more or less form it themselves, while they are encouraged to broaden their horizons by our design. The "real life" workshops and activities, on the other hand, are empowering by aiding them in getting to know other teenagers (and cultural backgrounds) better as well as becoming aware of their own strengths and resources.

Design draft

The current state of the design process is an elaborate design draft[10] that is clearly still part of pre-production. Instead of writing a design document we decided to create a document that, much like a log, evolves and documents design decisions. A Google online doc is used to maintain a central design log (Cook 2011). Project team members and programmers as well as designers of the external company building the game can use this document to raise and comment on issues. Comments and issues are then used to

refine and extend the design of the game. The document initially mostly revolves around intentions on what a certain feature should achieve instead of exactly describing how. These blanks will then be filled with time and several more iterations. The draft is supposed to further evolve over the course of a series of design iterations done together by the company making the game and the academic project team. The start of this shared design process that is situated before the actual implementation of the game also is the perspective from which this paper is written. Subsequent sections of this paper give an outlook from this point of view.

PHASE 4: GAMING AND EVALUATION

In 2012 the game will be played over a period of three months. The game itself will be available for longer but only during this period the alternate reality part of the game will be available. During this three-month period the game will trigger real world parties, workshops and a closing event, where game winners will be allowed to perform during GameCity[11], Vienna's largest annual games festival, will be held. Half of the interviewees will be invited and paid to play the game during that period while the other half will not play. After this three month period a second round of qualitative interviews will allow for comparison to investigate if playing the game had an influence on the social behaviour and relationships of players. Aside from the interviews ego networks, affiliation networks and gameplay metrics will be used to generate data for statistical evaluation.

Qualitative semi-structured media interviews (round 2)

After the gaming phase another round of interviews (with the same interviewees) will be conducted to check the effects the game has had. We will try to measure the changes in attitudes towards cultural diversity, identity and friendship. The second questionnaire will also contain questions about the Internet and gaming experiences for the last three months. To measure the effects of gaming, another ego-network generator will be used to collect the personal network data. The analysis ideally comprises online and offline social networks as well as numbers of friendships and peer group structures. Of course, we will also further analyse the game per se.

Social Network Analysis

As mentioned above, this study includes a social network analysis (SNA) using an ego network generator and network maps in both interview phases. SNA in game studies has only been applied in a few studies so far (e.g. Götzenbrucker 2001, Götzenbrucker and Köhl 2009, Landwehr et al 2009). This will highlight the constitution and development of online and offline relationships over the course of time.

An ego network is a network consisting of a focal person (the ego) and his/her connected persons (the alters). The ego networks collected in our project are based on interviews with the egos therefore the networks are constructed based on the subjective perspective of the interviewees. For collecting the ego networks we use the funnel instrument introduced by Hollstein et al (2011). A Java software tool collects data and displays visual representations of the adolescents' ego networks. Visualization (Pfeffer 2008) is essential for network data interpretation, using parameters like network size, proximity and distance of actors.
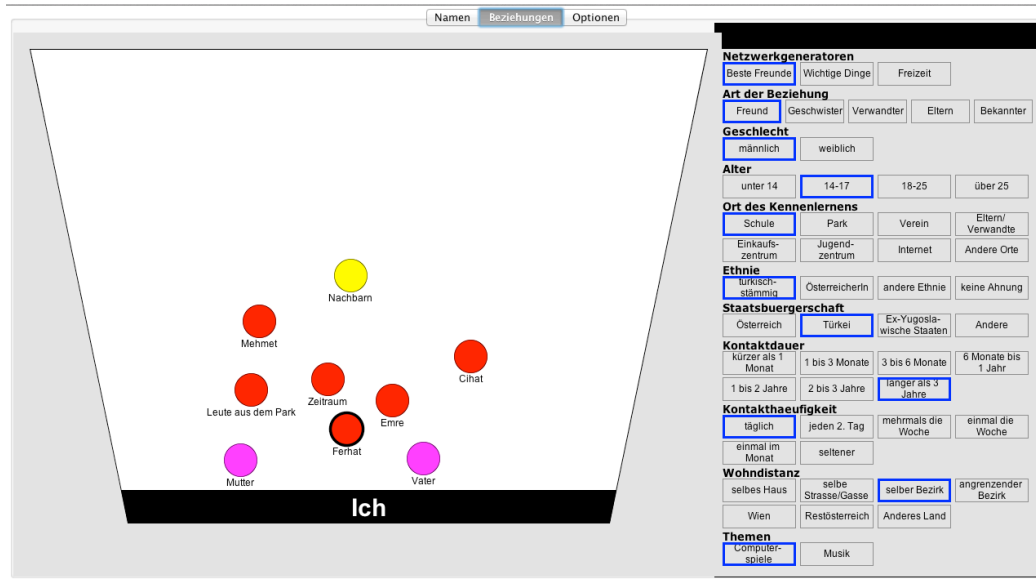
Figure 2: A screenshot of the software tool used to collect ego network data.

Social network analysis (Wassermann and Faust 1995)—within whole networks—is used to analyse the structure created through human interaction. This structure can be modelled as a graph (Sedgewick,2011) using nodes (e.g. representing players) and edges (to describe interactions between the players).[12] In the context of online games, social network text analysis (Carley 1997), for example, can help to describe emerging communication culture in massively multiplayer online games and virtual worlds (Landwehr et al 2009). More recently, new serious games are developed to serve primarily as social research tools (Landwehr et al 2010).

Social network analysis and the comparison of ego networks before and after playing the game will provide the foundation to analyse if players made new friendships and relationships by playing the game. It will also generate information on group building processes.

Affiliation Networks

Affiliation networks (Breiger 1974) are networks composed of persons and affiliations (e.g. events, companies). A connection in such networks may represent the participation of a person in an event or the board membership of a person at a company. These networks are also called two-mode networks (Borgatti and Everett 1997) because beside the persons there is a second group of nodes in the network.

For Serious Beats affiliation networks will be used to track player behaviour in relation to game objects and other players. This results in weighted graphs and likelihoods of affiliations.

Gameplay Metrics

Gameplay metrics (see Swain 2008 for a detailed account) will be used to store game-specific measurements, such as time–spent reports (where players spend how much time in the game), drop-out rates (when and where do how many players drop out of the game), retention (users coming back to the game) and more. This information can not only be combined with the data of affiliation and ego networks to produce scientific

results but will also be used to (re)balance the gameplay during the three month period in 2012. Gameplay metrics data can also be used to generate *"modeled representations of how players interact with the game"* (Tychsen & Canossa 2008) to discover different patterns of play and to build typical play-personas. The play-personas could then also be intersected with demographic and ego network data to track specific group building behaviours.

DISCUSSION

This paper is a research report written from the perspective of having carried out a good part of the project's preliminary research and design process. It presents a chronology which combinations of methods were and will be applied in the different phases of the Serious Beats project. The application of the suggested methodology is highly specialized in its details and tailored to the project at hand. Yet this paper can serve as a general entry point when choosing and allocating research methodologies in projects that tackle social issues through games. Elements of the presented larger-scale timeline and individual combinations of methods can thus be reflectively applied to other serious and/or research game projects. Not everything might be directly applicable to a similar project. But it can be assumed that the combination of an explorative approach to game design with strict formal methods to generate data as a foundation for the design process promises to yield innovative game concepts that can be tailored to a defined target audience.

The most interesting insight for both game designers and social scientists was to be mutually embedded in each other's research methods. To conduct qualitative interviews with young people in youth centres and schools and to be part of the design, discussion and evaluation of the empirical study provided invaluable insights and inspiration to the designers. Insights of comparable quality could not have been gained by just reading research reports. Conversely, for social scientists this collaboration provided a strong incentive to take part in the application of the results of their research. Also, considerations about game design present an interesting challenge to social scientists, as does trying to integrate social scientific approaches into the game from scratch instead of just analysing a game that has been built without social scientific support. That way, we not only gain insights into game studies but also have the opportunity of evaluating our own, social scientific ideas of "good" game design.

The two design workshops that have been held so far provided the best examples of collaboration of game industry partners, game designers as well as researchers and social scientists. During the workshops everybody was able to contribute to finding ideas and tackling specific design problems by combining a multitude of approaches and perspectives.

The explorative approach to the game's concept and design was facilitated by the academic nature of the project. A period of 7 months has been reserved for research and design before a single line of code will be written. The addition of students working on smaller problems by creating various prototypes, doing interface designs and qualitative interviews helped fill a pool of inspiration, ideas and thoughts. Thereby the team was able to explore various directions before narrowing down on a specific idea. Looking back, the music-based game prototypes were done too early, and thus could contribute only little because at the time there were no real questions to be answered through these experiments. The interface design for a music trading game and the social media charts prototype were developed later and both helped identify strengths and weaknesses of specific design ideas.

So far, the whole team has been involved in every significant step of the project. The shared responsibility also added to a deeper involvement of team members both in the design and social sciences background of the project. The multi-faceted methodology assures multidimensional data sets that will allow for the triangulation of sources and well-rounded results.

Overall the transdisciplinary approach of this project led to benefits on three different levels; individual researchers were able to broaden their perspective, design methods and social sciences research approaches complemented one another and finally the concept of Serious Beats has been shaped positively by the interplay of the involved people and approaches.

The project is unique in its research focus and conceptualization. Anno dato worldwide no other study has been conducted that combines immigration research with new technology work and cultural studies, focusing specifically on the possibilities of amplified and improved inter- and intra-group interactions through gaming behaviour. While currently only a few studies have been published that centre upon societal adaptations based on gaming behaviour in the German-speaking area our proposed study will juxtapose this new technology with the involvement of migrant youth groups, therewith combining arguably the largest central European dilemma, immigration and integration policy, with a social game that allows gamers and users to submerge themselves into entirely new realities as well as imagine and create new ways of interaction, acculturation and mutual understanding of cultural diversity.

FUTURE WORK
There might be a series of problems arising with the game itself.

• Players could focus on featuring non-music content. This might present a problem but could also be interesting.
• Youtube content itself might prove problematic because videos are taken offline all the time due to copyright infringements.
• Although the project is non-commercial and using music is relegated to Youtube, legal problems might still arise because of the use of proprietary content..
• The social potential of Facebook games rather builds on players' existing friends instead of furthering new friendships. The game will tackle this by matching up players and by providing suggestions and incentives to involve people with each other. The alternate reality part of the game is specifically designed to bring different people together.

The most interesting aspect will be to see if the game will generate long-term effects on players, and if and how it could be possible to explore these. The project's methodology for now is tailored to evaluate short and mid-term success of the game. Related to this aspect is the question of how success is defined; game designers usually evaluate success by seeing if players get engaged with the game, the number of active players their game has and the reviews it gets. The research perspective of the project gives a clear focus towards evaluating the immediately observable results of the game intervention. What remains unanswered for now is if and how the game can serve as long-term platform and sustained tool for integration and how its effects can be evaluated and improved in the long run. It will of course also be interesting to see if some of the game mechanics used to trigger collaboration and intercultural relationships can be abstracted and applied to other games.

The methodological approach presented here will be rounded out by later publishing the game's design document as a follow up to the design draft referenced in this paper. In 2012 a post-mortem that reflects on the design process will be published to further the understanding of how academia and game industry partners can work together.

ENDNOTES

1 http://igw.tuwien.ac.at/seriousbeats/ [accessed July 21st, 2011].

2 The academic partners comprise the disciplines of social sciences, political science, game studies, informatics, technology assessment, social network analysis, and also cooperate with a game design studio.

3 In the context of migration, second generation means those whose parents have migrated but who are themselves already born in their parents' new home country.

4 http://www.ichbinwien.at/ [accessed July 19th, 2011]

5 Analysis of the aforementioned interviews conducted by students has not started yet and is thus not included here.

6 For example see http://www.turntubelist.com/ [accessed July 19th, 2011] and http://www.tubedisco.com [accessed July 19th, 2011].

7 http://turntable.fm/ [accessed July 19th, 2011].

8 For example see http://wearehunted.com [accessed July 19th, 2011] and http://www.billboard.com/charts/social-50#/charts/social-50 [accessed July 19th, 2011].

9 http://bsc.glab.at/ [accessed July 19th, 2011].

10 The version of the design draft at the time of writing this document can be accessed here http://twoday.tuwien.ac.at/static/seriousbeats/files/Serious%20Beats%20Design%20Log.pdf [accessed July 19th, 2011].

11 http://www.game-city.at/ [accessed July 20th, 2011].

12 Network analysts cover a wide range of relational aspects of a (social) system in their research, for instance cooperation ties (who plays together with whom?), formal ties (who is accountable to whom?) or communication based ties (who gets advice and tips from whom?).

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