Casual mobile gameplay – On integrated practices of research, design and play

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ABSTRACT

The *Mobile Game Lab* is a community of players, designers and researchers of Mobile Games currently initiated from the research project *Landmarks of Mobile Entertainment*. As researchers we find ourselves in a quite complex, frightening and yet pleasurable situation. Our research goal is to develop a dynamic system of landmarks for pedestrian navigation by means of mobile game play. To achieve our goal, we have to play and involve other players, we have to understand the various facets of game design and research, we have to deal with different partners, and integrate their diverse practices. How to focus on such a project in a manner that the different forces involved move in synchrony with mobile game play at the core? Within our paper we introduce the casual mobile game *cubodo* as a first empirical instance of the lab for developing our approach and spelling out what we call the mobile game play cycle. More than other games, Casual Mobile Games defy traditional definitions of gameplay and related concepts of game design and research. Casual mobile games are deeply intertwined with everyday activities. To understand, deploy and deepen this connection the integration of play, design and research is required. Accordingly we found that *cubodo* was well suited to form the idea of the lab.

Keywords

Integrated practices of play design and research, game play, Casual Mobile Game, Mobile Game, Location-based Game, Pervasive Game, Mobile Game Lab, Living Lab

INTRODUCTION

The research project "Landmarken Mobiler Unterhaltung/Landmarks of Mobile Entertainment" (LMU) started in October 2010, funded for three years by the German Federal Ministry for Education and Research (BMBF). Partners of the project are several

mobile game companies, a mobile service agency, media companies, a research lab from the industry, and several institutes for Geo-Information Science[1].

The goal of the research project is to develop dynamic systems of landmarks as a side effect of ongoing mobile play activities. Dynamic systems of landmarks or briefly dynamic maps are the result of practices, by means of which players accumulate metadata either explicitly by tagging and annotating or implicitly by physical movement through the game world. Such a map may very well be a treasure map drawn by a pirate, hidden and forgotten over hundreds of years, and re-discovered by kids. Such a map may be a map of obstacles for a traceur, a tracer, that is a participant of a Parkour, who takes the most direct path through the surrounding environment across obstacles as rapidly as that route can be traversed safely. Such a map may provide an overview on historically linked locations of a city or on landmarks pointing the player into the right direction. Maps of this kind are dynamic in that they continuously emerge as a result of activities in geographical space and are used as conditions of further activities in space by players or other pedestrians.

Ongoing mobile play activities are the decisive condition to achieve our research goal: dynamic maps. The project develops, initiates, and anchors mobile games. These mobile games rely on the physical movement of players in a game world, which combines the real world with virtual dimensions. To anchor games we ignite events of games from our network and build the Mobile Game Lab (MGL), designed to enable ongoing play activities, and to deepen collaboration between players, researchers and developers. Game labs are usually part of an institution for research and education. We aim for our lab to become not only an organization for researchers, but also for players and developers (on Living Labs, cf. Eriksson et al. 2005). Within this collaboration each party, we hope, will benefit from the other. The *players* connect with other players of their own community and of other communities. They get to know other mobile games, become involved in experimental games and are supported in developing games themselves. Being in a direct contact with players and developers the *researchers* have the possibility to study ongoing play activities and to evaluate games insofar as the players agree and participate. They deploy the infrastructure for longitudinal studies and feed back their results to the game lab. *Developers* of Mobile Games offer their players play possibilities and services. They access their target audience more effectively than they would have relying only on themselves. This so far, is our idea of the MGL. However, as always, reality turns out to be different.

The goal of this paper is to develop and understand the *modus operandi* of the MGL. Towards this goal we deploy the casual mobile game *cubodo* as a first empirical instance to outline our approach to the MGL. We start with a section on the challenges of the MGL and our first way of handling them according to the situation we have faced at the very beginning. We then focus on (casual) mobile game play, the core of the MGL, and the aesthetical issues involved, by presenting an empirical study on the particular nature of casual mobile play and the landmarks they use playing. In the final section we outline the working model of the lab and describe how we handle the mentioned challenges by bootstrapping the lab.

AT THE BEGINNING
The integration of play, design and research of mobile games questions traditional practices of each party in this collaboration. Experiences in running predecessors of our research project brought particular challenges to our attention (Harzem et. al. 2009).

Challenges

Research: We are able to achieve our research goal only if we succeed in engaging players to start and maintain playing. Playing is the *sine qua non* of our work not only for developing games, but also for building the player community of the lab, and eventually for identifying landmarks. On the one hand we have to play, to organize game events and to communicate with other players and with potential players. On the other hand we have to do research in the traditional sense: to design, develop and study mobile game play and dynamic maps. Nevertheless, the measurements against which our research results become evaluated are still traditionally defined. The challenge is to integrate the activities, research, development and play without restricting any of them.

Development: The mobile game companies, we collaborate with, are small companies. Some of them are spin offs of university institutions. They know enough about research on mobile games to value the collaboration with researchers. But business is a different issue. Those, who started years ago in an environment, when the huge market potential of mobile services was primarily a promise to the future, had to learn the hard way how to initiate, develop and maintain the relation to their customers, how to communicate with players and potential players, how to access the market. The idea of becoming a partner of the MGL and to integrate their own player community into the lab community attracts this type of developers. The lab promises to provide access to other communities and thus to the market. However, this doesn't work in the beginning. It is risky for a company to introduce the own audience to a lab, which is only a research endeavor with a temporally limited perspective at least today. And it is further risky to introduce them to competitors also engaged in the lab. In the beginning the MGL is merely a possibility. Neither the access to the market, nor the benefit of collaborating with competitors is reality. The challenge for us initiators is to bootstrap the MGL.

Playing: For players the MGL offers possibilities of playing, developing and studying mobile games. However, any mobile game lab, which enables the production of dynamic maps and thus enables value creation by means of playing, immediately suggests aesthetical and ethical questions. During the first predecessor of the current research project our students play-tested the game *CityExplorer* (Matyas et al. 2008). They got the impression to primarily feed a database with landmarks. Implementing a serious purpose like dynamic map creation as a side effect of playing (cf. von Ahn 2006) one runs into risk of losing the playability. The aesthetics of mobile games and casual mobile games is the core issue to be taken into account in building the MGL. Playing players will measure the world once more. The serious purpose of map creation has also an economical dimension. Who benefits from that? The ethical questions have to be thought through thoroughly as well.

First steps

Right from the beginning we knew, there will not be any dynamic system of landmarks, if there is no continuously playing community of mobile games in the MGL. And we faced the mentioned dilemma of bootstrapping the lab. In winter 2010 however, we came across conditions we could not have planned for. Our master students developed *cubodo* a game, not explicitly designed for landmark identification, and founded a company in February 2011 to publish the game. The company became a partner of the research project. We offered them to participate in building their community by means of the lab. We used the playtest of the master project in December 2010, conducted by Nassrin Hajinejad, and the publication of the game in April 2011 for the first steps of the research project. In parallel to building the online presence of the MGL Iaroslav Sheptykin

developed a first working model of landmark identification using the data of the *cubodo* playtest. And the project deployed the *cubodo*-technology to build a further mobile game *Ostereiersuche* organized as an event, temporally confined to the two days of Easter 2011 and spatially confined to our city.

CASUAL MOBILE GAME PLAY
The Mobile Games we have developed since 2003 are based on the physical movement of players in a mixed game world, combining the real world with virtual dimensions. More or less accidently we came to develop a *casual* mobile game in a study project from Spring 2010 to Spring 2011, and very soon encountered the shortcomings of our own understanding of game aesthetics until then.

Aesthetics
During the last decade the debate on the magic circle provided a powerful lens to understand games and their development and to reflect on the changing relation of games to everyday life (Huizinga 1955, Salen & Zimmerman 2004, Montola et al. 2009, Grüter 2004). The trajectory drawn by the debate ran from the state of temporal, spatial and social separation between game play and everyday life to a state within which the temporal, spatial and social limitations between game play and everyday life have become permeable. From this point of view the aesthetics of games has been defined in former times by a clear separation between play and ordinary life, while the aesthetics of games today reflect the permeability of this border between both areas. We are currently aware of three different design approaches, each of them emphasizing a different aspect within the relation of game play and everyday life: (1) Alternate Reality Game, (2) Pervasive Game, and (3) Mobile Game. The Alternate Reality Game Design Approach follows the "This is not a (Game)" Design philosophy. These designers look to ignite play within everyday life without introducing the game as a game (McGonigal 2004). The designers of Pervasive Games are border crossers. They focus on the spatial, temporal, and social borders between play and everyday life. They try to blend both worlds by expanding the spatial, temporal or social borders of the game world (Montola et al. 2009). We, designers of Mobile Games, focus on the game play of the player, who defines and redefines the magic circle while playing within changing contexts. We try to understand and support the player who when playing, takes into account the context and eventually changes the game (Grüter et al 2010).

Participating in the development of *cubodo* we got the impression that the state described by the permeability of the borders between game play and everyday life was transitory at least when it comes to casual mobile games.

On casual mobile games
In recent years, there has been an increasing amount of literature discussing the phenomenon of casual and mobile games (Juul 2009, Trefrey 2010, Li et al 2007). The Causal Game Association (CGA) gives the following definition: "Developed for the general public and families, casual games are video games that are fun and easy to learn and play". Kultima et al. (2009) categorize the different aspects of "casual": including type of games and players, the way of playing, and the attitude of playing, concluding that "Casual is not a simple list of properties of a game. The phenomenon is an answer to a specific *transformation of game cultures*, forming a *set of design values* that correspond to these changes" (p. 5 – emphasized by NH). Focusing on commitment and movement in games Eyles and Eglin (2008) define ambient games as a class of games equivalent to ambient music. While some games require the player to move around, ambient games

give the opportunity to engage in the game by moving from one location to another but leaving it up to the player how much they like to engage. The authors conclude: "The key component of an ambient game is that *the player may choose their level of interaction with the game*" (p.2 – emphasized by NH). A contribution from Nir to the blog *Games Alfresco* reflects some issues of this debate quite nicely. According to Nir mobile games have to be casual. "I believe, that 'mobile' and 'immersion' are conflicting goals. Our mobile platforms are way too limited to enable immersion. … Even more importantly, most mobile game players are not 'gamers'. They do not have a day to spend in a quest around the city. Users require simple but challenging games which can be played during brakes, while waiting in line or while riding the bus" (2010). Despite of going for casual mobile games ourselves we question the assumptions of this conclusion: immersion in our view is not bound to technology, mobile gamers will have time to spend for a quest when they want, and casual games are not only games fitting into the gaps of everyday life. While common casual games played on a mobile device are designed as a fill-in in between other activities, we believe the challenge of designing a casual mobile game is to employ real life activities as game activities. Thus by casual mobile games we refer here to games, which (a) deploy everyday activities as play activities, (b) allow a casual way of play and thus meet the characteristics of ambient games (Eyles & Eglin 2008), and (c) use spatial movement and location-based interaction as the core play action.

Back to play
From our point of view today, casual mobile games resolve as game systems and become moments of play emerging within everyday life. While all mentioned approaches refer to games as games we refer here to games as moments of play. Casual mobile games add an aspect of playfulness and free motion to ordinary life: you can do something, but you don't have to. The consequences of your play actions are not binding. You may follow them later, but only if you wish, if not, it is fine too. Partly it seems that we are going back to the roots, to the original source of each game play. Where do games come from? They don't fall from heaven, they emerge as moments of play within ordinary life. This transition from traditional games separated from ordinary life, to games intermingled with ordinary life, and eventually to playful moments of ordinary life is, as it seems for us, the decisive aesthetical aspect of casual mobile games. These games neither enforce nor exclude immersion. They are casual because of their integration into life. As moments of play they may become important for the player allowing immersion like other moments of life but don't have to. Because of their integration into life they afford and facilitate the collaboration of players, researchers and developers and are particularly suited to be played, studied and further developed in the MGL.

The game cubodo
In our everyday life we are constantly on the move. We drive to work, visit friends or go for shopping. *Cubodo* deploys these movements and turns them into a playful and social activity. The main goal of the game is to transport a *cubodo*-package collaboratively around the world. This is done by picking up or creating a virtual package, transporting it by real physical movement and handing it over to another player. As packages are assigned to geo-positions, players change the location of a package only by physical movement. To hand over the package it is dropped by one player and picked up again by another player.

Starting the game the player sees a Google map visualizing the player's position and the location of *cubodo*-packages and footprints. *Cubodo*-packages are virtual boxes containing pictures and notes dedicated to a topic. The geo-coordinates, the distance it

has traveled and its origin connects a package to the real world. The only one who is able to perceive the content of a package is the player who carries it. To pick up a package the player must be in a maximum distance of 500 meters from the package. After picking up a package the player is able to carry it, and to transport it from one location to another. While carrying the package the player is able to browse the pictures and notes added by other players and rate those. In order to drop a package the player has to add a picture regarding the topic of the package. Players can mark locations they are currently at and visit regularly by adding "footprints" to the map. In addition, locations, where players drop a package, are marked by means of footprints automatically. Creating footprints, players let others know that this is a potential spot for exchanging packages.

Empirical Study

As the game *cubodo* has at least two significant characteristics that are different to traditional event-based games confined by the magic circle we tried to understand if and how these spatial and temporal characteristics of *cubodo* influence the play experience. In our report here we focus on indices of the casual mobile play experience.

The playtest

The game *cubodo* has been play-tested from December 1st to December 18th, 2010. The playtest was designed and organized by Nassrin Hajinejad, a member of the study project. We changed the game rules of *cubodo* slightly for the playtest. The playtest game goal was to transport a package over a distance of 15 kilometers either towards west or east by at least three players.

12 players, 7 female and 5 male, participated in the playtest. While four players were involved in the design process of the game, the rest of the participants played the game for the first time. Five play testers describe themselves as casual players, while five do not play games on regular bases and two play video games only. As *cubodo* is a casual game the players were free to play whenever and wherever they liked.

Due to a misfit between the technical measurement 15 kilometers either towards west or east and the geographical extension of Bremen from northwest to southeast the players were not able to achieve the game goal. As the players did not know this, it did not affect their behavior.

Data collection and analysis

Approaching the playtest we became aware of one severe limitation of our methodology. We studied mobile play experiences until then by applying a particular combination of quantitative and qualitative methods: We collected process data on play activities by means of log-files and video- or audio-recordings (Grüter et al. 2010). However, the latter methods require games spatially, temporally and socially defined and organized as events. These methods are not applicable to the sporadic play activities of casual mobile games. You cannot follow a player during his everyday life anywhere and anytime just hoping to get a glimpse on his or her casual mobile play actions.

Data collection: Accordingly we applied a different combination of quantitative and qualitative methods: we collected quantitative process data by means of log-files as before and qualitative data by means of interviewing the players before and after the playtest. The qualitative part of our study includes (1) a player profile, created before the playtest by interviewing the players, and (2) an interview after the playtest. The player profile gives personal information about the player, in particular information about work

place and other regularly visited places. After the playtest we asked the players open-ended questions about their associations and remembered situations while having played the game. We used the information to interpret the quantitative data. The quantitative part of our study is presented by log-files created during gameplay. The log-files store information of the player, the play action performed, the location (GPS) and time of performing the action. We got 1285 data for landmark identification and 1064 data for our study of the play experience. The reason for this difference between both numbers is the playtest organizer, who prepared the playtest. Her log-files data are part of the data set used for landmark identification, but not part of the data set used for studying the play experience.

Data analysis: We then prepared the collected data for analysis using the Google maps API. Play actions of a player are visualized on a map indicating the particular action by different icons. Thus we became able to filter and visualize the data with reference to selected players, play actions, locations and time. Combining the generated log-files with the participants profile and post-interview-data allowed us to gain insight into the individual moment of play. In order to find meaningful units of play activities we followed the course of play actions of each player and distinguished two different play units called session Type A "situation checks" and Type B "actions with packages". We analyzed the course of play actions of each player exchanging packages and looked for repeated exchange between different players. In a next step we applied data mining methods to identify landmarks.

Moments of play

We start with a brief overview on the results and then focus on the particular nature of the casual mobile play experience.

To get a first impression of the relation of the player to the game world we took a look at the distribution of session types. 88% of all sessions happening belonged to Type A, while 12 % belonged to Type B (see Table 1).

Session type	Number of sessions	Ratio %
Situation Checks (Type A)	176	88
With Packages (Type B)	25	12
Total	201	100

Table 1: Type of sessions played; Type A – players check the situation; Type B – players create a package or content for a package or pick it up or drop it.

The one extreme pole of the distribution of sessions per player is for two players, Player 9 and Player 12, 100 % Type A and 0 % Type B and the other extreme pole is for two players, Player 11 and Player 7, 75 % Type A and 25 % Type B (see Figure 1).
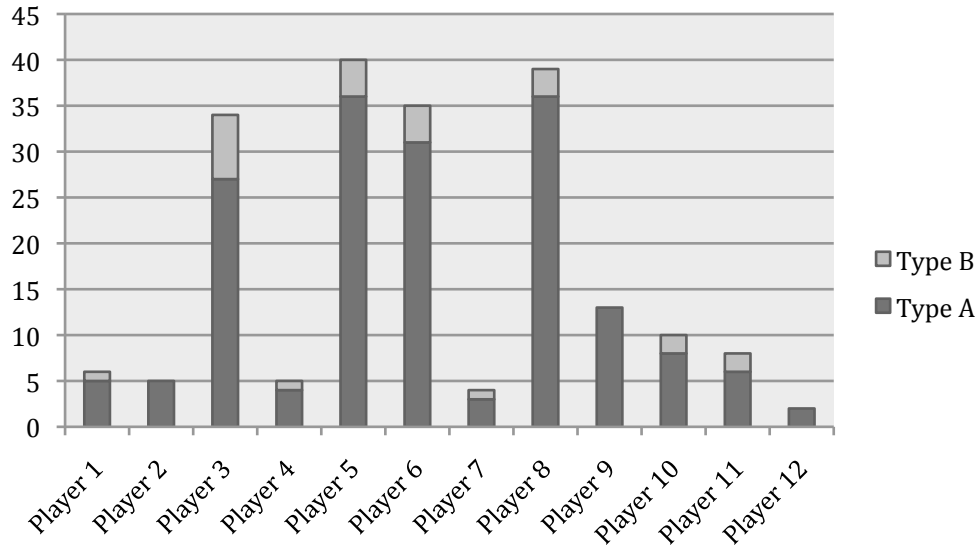
Figure 1: Number of play actions and distribution of session types per player.

Discussion: Not surprising players much more often check the situation, than creating, picking or dropping a package. Checking is done easily, while to create a package needs an immediate impulse. In the beginning you will do it one or two times and then wait for resonance.

To deeper understand the particular play experience we conducted further steps. We found three different indications pointing to the particular nature of the casual mobile play experience. (1) The spatial and temporal dispersion of play actions (2) Virtual items breaking out of the game (3) Socially meaningful play.
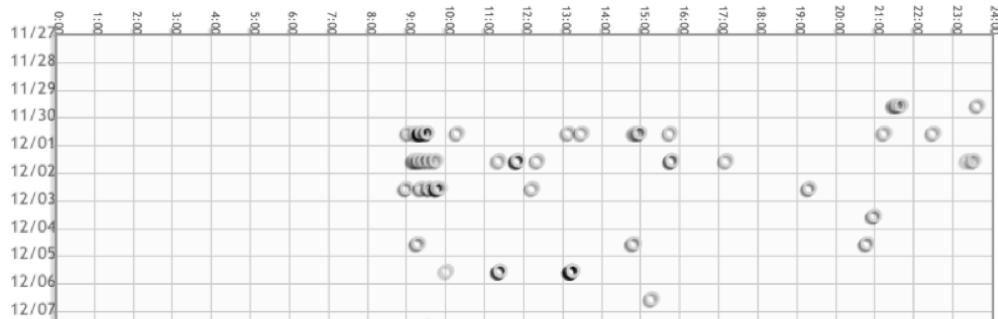
(1) Spatial and temporal dispersion of play actions: The map visualizes the location of each play action of Player 5 during the playtest (Figure 2) distributed throughout the city.
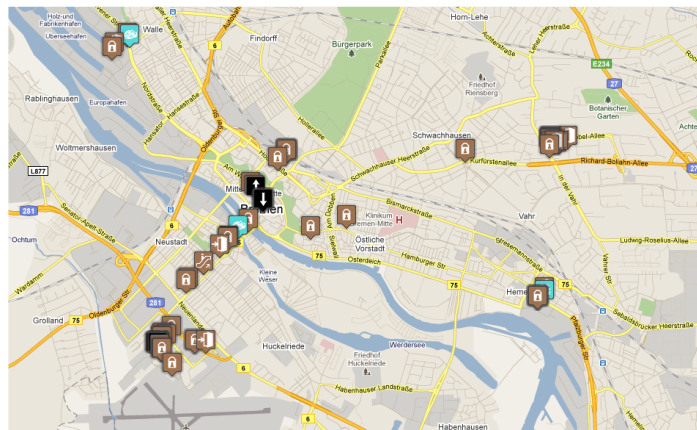
Figure 2: Spatial dispersion of play actions of Player 5.

The figure 3 indicates temporal characteristics of the play activity of Player 5. The vertical axis shows the day of the play action. The horizontal axis shows the daytime. Player 5 stopped playing the game after December 7th. The play actions are dispersed through the whole day while happening mainly between 9 and 10 in the morning.

Figure 3: Temporal dispersion of play actions of Player 5.

Discussion: The map overview about the spatial dispersion of play actions of Player 5 and the table about the temporal dispersion indicate sufficiently that the players don't feel confined within a particular game world different to their everyday life. The temporal and the spatial data confirm our idea of a transformation of the game into moments of play within everyday life. The table overview on the play actions further shows the decline of the frequency of play actions after some days, what obviously indicates a declining interest in playing the game. We attribute this to the small amount of players, which are able to give resonance to the own play action.

(2) Virtual items breaking out of the game: In their post-interview five of twelve players mentioned to having consciously watched out for *cubodo*-packages at places they had found packages before.

- "On my way through the city.... I knew there will be packages and so I always opened the App."
- "Being in a new location I had the game in mind and looked for packages "
- "I didn't even mind missing the tram to drop a package"

Discussion: The way game items are interlinked with the real physical world changes players' perception of their real life environment. Though virtual the meaning of the items is not reduced to the virtual level of the game world only and even not reduced to the game. The *cubodo*-packages can be used for other purposes than gaining points. The quotes of the post-interview confirm this conclusion. They items are not only meaningful within the game. They become meaningful within real life.

Directly related is the following observation.

(3) Socially meaningful play: Following the course of the play of a single player we came to analyze repeated indirect encounters of players, a characteristic we found most promising. The following example demonstrates how players, without knowing each other, encountered each other during the playtest. *Andrea*, a female player, picks up a package A near her working place in the morning. A male player, *Vlado*, dropped the

package A an hour before. The next day *Andrea* picks up another package B in the city center, *Vlado* has dropped before. After opening the package B she adds a picture to the package A, she had picked up from *Vlado* the day before and drops it at the same location in the city center.

Discussion: The game supports the indirect encounter of strangers, who may recognize each other by content or name. This subtle form of communication adds a social dimension to the play experience: The everyday world is enriched not only by virtual packages, but also by strangers and possibilities of social interaction, I may follow, but don't have to.

Landmark identification

According to our research goal to create dynamic maps as a side effect of play activities we use *cubodo* as a first instance to identify landmarks and to develop a working model of landmark identification.

As already described, *cubodo* game rules encourage players to mark certain places explicitly by means of footprints as places, which are suited for the exchange of packages. The data mining methods we applied to the data set enabled us to evaluate these explicitly annotated landmarks and to identify implicitly created landmarks additionally.

We understand landmarks as significant, distinctive features of an environment, which act as reference points for their users for defining the spatial structure of the environment. Significance and distinctiveness are concepts, whose meanings deeply rely on the context of its use. In this study we reduced landmarks to locations and their significance and distinctiveness to plausible, calculable values.

Each of the 1285 data records from the log-files represents a play action, a player, a location and a time. To identify which one of these data entries points to a landmark we at first identified the distinctiveness of the locations. We clustered all locations, given by geo-coordinates, in a geospatial distance of 15 meters to each other. We received 212 *distinct locations* as result.

To identify the significance of one of these locations we did the following steps. We reduced significance to the semantic weight of a play action. We assigned a value between one and four to each play action type and then calculated the significance of a location by the semantic weight of the play action performed at this location.

A combination of these steps allowed us to identify *personal landmarks*, i.e. locations that are distinctive and significant for a single player. We ordered them according to their priority in a sequence of five landmarks. We further identified *social landmarks*, distinctive and significant locations that are shared among players. Combining these landmarks with the daytime of performing a play action we became able to identify locations like the *home, the working place, the local supermarket of a player*.

Applying this method to the data set, allowed us to successfully identify landmarks with a relatively high level of *accuracy* and low error rate. The most precise results were obtained for the users who performed the highest number of actions. The *verification* of calculated results through a post-interview showed their high accuracy even for players with a low rate of play actions. For instance, home address of player 9 could be detected

with a mistake of one house number. On the other hand, the same accuracy could be obtained for the player 4 with only 32 actions recorded, but only in a detection of a working place as the majority of the actions related to that location. No other landmarks for this player could be detected though.

In order to increase the accuracy of the results we defined the social significance of a location by the amount of references to this location from Wikipedia, Google maps, OSM, and *Foursquare*. The results show a positive correlation between places detected using recorded data and the quantity of information obtained from external services. For example, the most significant location identified had 116 related actions, had one Wikipedia entry, and five *Foursquare* venues surrounding, which was the highest amount among all others. This supports the assumption that the significance of a location in *cubodo* relates to its significance in everyday life. Landmarks created by means of *cubodo* can be used therefore outside of the game for pedestrian navigation.

Discussion

We are aware of the difference between *cubodo* and those casual games, which are designed and function as complete games as they fit into the time slots of everyday life. The casual game *cubodo,* we describe here, resembles this kind of casual games as it allows like them a lightweight play style. The difference between *cubodo* and these other casual games is, that the *cubodo* game system is deeply interwoven with the everyday life. As the results of the analysis show play actions of casual mobile games are temporally and spatially dispersed. Moreover the game actors are real people, their play actions and the game items they play with get a physical meaning. The game system becomes resolved and reduced to moments of play emerging within everyday life. While games are bounded by rules and follow a specific goal, play is open-ended. In play the acting person defines and follows own mutable goals, the performed actions do not require a higher purpose. The time and location of play arises spontaneously and emerges from the context of the player.

ON THE MOBILE GAME LAB

More than other games Casual Mobile Games defy traditional definitions of games and related concepts of game design and research. Casual mobile games are deeply intertwined with everyday activities. To understand, deploy and deepen this connection the integration of play, design and research is required. To put it short, Casual Mobile Games require the MGL and vice versa. Being still in the phase of building the lab, we briefly elaborate on this connection before we refer to our experiences and current answers on building the lab.

Casual Mobile Games, Labs and Everyday Life

Labs are traditionally part of a research and education institution. So are Game Labs. As such they are separated from everyday life. The Mobile Game Lab is designed to be different. It is, where mobile gameplay happens. It is integrated into daily life.

63 out of 136 Game Research Institutions are explicitly organized as a lab or provide a lab according to the overview of the Digital Games Research Center (DIGAREC)[2], which primarily focuses on American, Canadian and European Institutions without taking into account game research in countries like China, Japan and South Korea, all of them strongly engaged in digital game development. However, we assume, that each institution, which regularly studies games, players or gameplay has to have some lab-like infrastructure or functions to evaluate game prototypes and to analyze players' behavior.

Similarly we assume that each company regularly concerned with game development has to have a lab-like infrastructure or functions.

„There are many functions" a game lab „can fulfill" following Flanagan et al: „a venue for collaboration between disciplines, a resource to study games and players, as well as an environment to develop experimental games and foster innovation in game design." (2009, p. 1). Labs vary though with regard to the games they study, the framing conditions and the concept of the lab, its functions, the games, players and gameplay (cf. ib.)

The stationary lab is not sufficient anymore when it comes to Mobile and Pervasive Games. Those mobile games, which are based on the physical movement in a mixed game world, have to be play-tested in the wild. And even those mobile games, which function like a reduced version of a PC Game, in that the gameplay happens within a virtual world, are recommended to be play-tested in their context of play, the daily life (cf. Isbister 2010). For casual mobile games eventually one cannot apply video observations methods anymore. It is impossible to shadow players through their whole life. The Mobile Game Lab has to be integrated into the daily life of the players. This lab has to become an institution of players and not only of researchers and developers. In this kind of lab the players and their gameplay become recognized as the sources of innovation (Grüter et al. 2010). The Mobile Game Lab has to become a Living Lab. "The Living Lab concept originates from MIT, Boston, Prof William Mitchell, MediaLab and School of Architecture and city planning. Living Labs represents a user-centric research methodology for sensing, prototyping, validating and refining complex solutions in multiple and evolving real life contexts." (Erikson et al. 2005, p. 4).

In our first trial of building the Mobile Game Lab the casual game *cubodo* allowed us researchers to identify landmarks and to develop a model of landmark identification. It further enabled us to deepen our understanding of play experience and to develop our methodology. These results contribute reciprocally to the further development of the game *cubodo*. The lab is already a place for researchers and developers to collaborate. It still has to become a place for players.

On Building the Mobile Game Lab
In the beginning we mentioned three challenges to be crucial for successfully building the *Mobile Game Lab* (MGL): to integrate the practices of research, development and play without restricting one of them; to bootstrapping the MGL out of nothing and to deal with the aesthetical and ethical issues at the core of the MGL. Within this paragraph we first come back to the aesthetical and the ethical issues and summarize our current way of dealing with them. We then take a look at the challenge to bootstrapping the mobile game lab and summarize our strategy we have developed starting with *cubodo*. We finally take a look at the challenge to integrate the divergent practices of design, development and play and outline the modus operandi of the lab.

Aesthetical and ethical issues
Cubodo represents our first approach to landmark identification via games. To evaluate the aesthetics of such a game eventually longitudinal studies are required to deeper understand the nature and conditions of casual mobile gameplay. This kind of studies does not function without integrating practices of development, research and play. Nevertheless, the playtest of 18 days allowed us to get at least a first empirical based idea

of casual mobile gameplay and the particular play experiences, a first evaluation of the game, and a first working model of landmark identification.

Aesthetical issues: The results of our study confirm the assumption that it is possible to collect data for landmark identification without influencing the playability of the game. We ascribe this to the particular aesthetics of *cubodo,* which we also understand as a result of the particular conditions of its development. At the start of the study project in March 2010 the students explicitly declined to develop a game for landmark identification and further belonging to the *facebook*-generation they had very different ideas on mobile entertainment than Barbara Grüter, one of the supervisors of the study project, head of the research project, and third author of this paper. The tensions between the social media design approach adopted by the students and the mobile game design approach adopted by her characterized the first months of designing *cubodo*. Today, we see the particular strength and potential of *cubodo* as a casual mobile game in difference also to *foursquare* and *gowalla* in that it merges the contingency of social media activities with the goal-orientation of location-based games.

Meanwhile we have started *cubodo* and became aware that the bootstrapping issue is not only one, which characterizes the MGL, but also *cubodo. Since cubodo is a multiplayer game a critical mass of players is needed to make the game enjoyable over time.* We look for further developing this aesthetics of the game by emphasizing the location-based social network.

Ethical issues: The ethical issues we deal with range from the issues of the economic exploitation of landmark production by means of mobile gameplay to issues of privacy and data security. The metadata accumulated by the players either explicitly by tagging and annotation or implicitly by physical movement through the game world are the raw material to identify landmarks. The way, how we work with these data is and will be defined always in the terms of use for the games and the MGL, which the player has to sign as a condition of play. Regarding the economical value we currently understand the explicitly annotated landmarks as open source data, which we may integrate in *Open Street Map.* Regarding the implicitly accumulated metadata of use activities and the landmarks identified by means of research activities we aim to develop a business model together with partners. As by now we will feed back the money gained into maintaining and further developing the game lab. We will establish control mechanics into the lab allowing the players to control the outcome. The ethical issue of how to deal with privacy and data security has already appeared in our analyses of the playtest data. We could easily identify for instance the home address of players. All personal data and data, which enable us to refer to the person, we will not disclose to third parties. We are not able to anticipate all ethical issues emerging in the further process of building and maintaining the lab. We therefore will establish control mechanics into the lab as mentioned already allowing the players to control the lab activities.

Bootstrapping
While established companies do not hesitate to collaborate with the research project in developing and promoting games, but hesitate to introduce their community to the lab, the start-up, which originated from the study project, was willing to cooperate from the beginning. This was one important condition for us to build the lab.

The current activity cycle of our research project consists of the following elements: developing a game in collaboration with a mobile game company, staging the game in

collaboration with a media company, playing the game, studying the play activities and feeding back the results to the partners. We started the cycle meanwhile for five times. Within this paper we introduced the development, playtest, and analysis of *cubodo* as the first initial cycle, conducted by the study group partly in collaboration with the research project. A second cycle started with the development of the game *Ostereiersuche* based on a modification of the *cubodo* technology. A third cycle will start and promote *cubodo* as a game around the world. A fourth cycle focuses on building a location-based social network based on a modification of the *cubodo* technology again. In a fifth cycle we collaborate with a rider community, which traditionally organizes orientation rides following game mechanics like scavenger hunt and is interested now in a mobile game.

However, this is the activity loop of the research-project to bootstrapping the mobile game lab. This is not the modus operandi of the mobile game lab itself. The repeated activity loop of the research group has the goal to build the MGL by igniting gameplay with different games. What are the criteria of a successful start of the lab? The minimal conditions required to achieve our research goal are ongoing play activities. Thus, continuous mobile gameplay is at the core of the lab. Criteria for a successful start of the MGL are: a growing number of players, a core of them actively engaged in discussing, rating, initiating, and continuously playing a number of games for different target groups. At this point in time, the Summer 2011, we cannot talk about having fulfilled these criteria. We assume that the activity cycles of the research group will result in games for different target groups, attract players and initiate gameplay. We assume, continuous mobile gameplay emerges over time. Whether we succeed with this strategy or not has to be decided later.

Modus operandi
We felt the need to define the modus operandi of the MGL as the activity cycle of the research group encompasses all parties and processes involved in the mobile game lab from the research point of view. The activity loop of the research project and the activity loop of players are different and the same goes for the activity loop of a company. All of them have the same partners involved and integrate the same practices.

Here we outline the modus operandi of the mobile game lab as seen from our point of view today. We envision the MGL in form of three different activity loops all of them having mobile gameplay at the core: the players, the developers and the researchers. The players play. The developers enable play. And the researchers study play. The border between play, development and research is sharp regarding the difference, but not absolute. The developers have an impact on the gameplay via games and the researchers have an impact on mobile gameplay by feeding back their results to the developers. Players play, develop and study games themselves and thus have a direct influence on the other ones. The integration of the practices generates contradictions and imbalances and may become the source of innovation. There is a further ring consisting of partners, who are potential customers and promoters of games, like media companies, and finally there is an outer ring including the audience, the market, and the scientific community. Just now still in the beginning this MGL exists only in a nuclear form of integrating research design and play.

ENDNOTES

[1] In detail: http://www.informatik.hs-bremen.de/gob/lmu/index.html
[2] See the overview of the Digital Games Research Center, http://www.digarec.org/gamesresearchmap/doku.php?do=show&id=start%3Agam esresearchmap, last update: 2011/04/08 19:21.

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