ABSTRACT
Music incorporates extensive social functions, with joint listening being a central part of it. Interestingly, existing technology rarely addresses the specific requirements for creating a shared music experience. The present design case presents Mo, a music player addressing social and emotional aspects of joint music listening. Based on insights from an interview study, Mo particularly supports the social phenomena of sharing music, influencing music and music functioning as a souvenir. In line with the experience design approach, the actual object of design was the shared music experience. Functionality, interaction and presentation were aligned with that experience.

Author Keywords
User experience; experience design; joint music experience; social interaction.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms
Human Factors; Design.

INTRODUCTION
Music has a strong social dimension [1]. Tastes in music are an expression of character, a personal statement, and thus often define individual positions in a social context [4]. Through this, the shared exploration of one's private music collection becomes a quite intimate act with psychological significance. There are diverse occasions for such moments, parties, the workplace or a barbecue with friends in the park. The resulting social situations are also shaped and mediated by the technology used to provide the music (e.g. iPod, PC, hi-fi system). However, shared music consumption is hardly taken into account by available entertainment technology, neither in terms of functionality, nor in terms of form and interaction design. As an alternative to existing technology, we present Mo, a music player concept, which explicitly addresses the social dimension of joint music listening.

Based on an initial interview study, we first discuss current practices and social and emotional facets of joint music listening. We then describe how these insights inspired our design and present the final concept and its realization in form of a functional and design prototype.

MUSIC IN A SOCIAL CONTEXT: THREE PHENOMENA
To gain insight into relevant phenomena of listening to music in social situations, we performed an initial, exploratory interview study. Nine participants (four female, age range 23-31) were interviewed at home. The semi-structured interviews lasted about 45 minutes. Questions addressed general aspects of experiences with music, such as rationales behind the selection of songs when creating playlists for special occasions, habits of buying and collecting music, or currently used entertainment technology. The main focus, however, was on joint listening to music, including typical situations and routines, ways to influence music in social contexts, potential conflicts, as well as habits of sharing and exchanging music.

A thematic analysis of the interviews revealed three phenomena of special relevance for the social domain:

Sharing music. People enjoy sharing music. Besides presenting their own favourites, they are interested in the music others listen to. Especially when getting to know someone, discovering this person's musical taste is crucial. As one participant pointed out: "I always like when it comes to sharing favourite music, especially when you are with someone you actually don't know very well. You easily get an idea about the person's character." (P1). Music thus functions as a social code, revealing one's "character." This self-revealing aspect makes sharing ones favourite songs quite an intimate act.

Influencing music. Given the personal value of music, people naturally want to influence the music in social settings, and adjust it to their needs and tastes. At the same time, the responsibility for choosing music (e.g. preparing a play list for a party) is often found to be a burden. Choosing the "right" music for the moment can be challenging and is
often associated with concerns about rejection. Two friends explained: "And then the question comes up: 'Could you handle the music?.' But everybody tries to pass it on 'Mhm, no, do it yourself.' (his mate adds) 'In fact nobody wants to do it. You risk that the others don't like what you are playing and then start complaining. Then you are the one who has to deal with it. Searching through the lists, trying out new stuff – until you found something that works for all.' (P2, P3). However, suggesting music to others can also be a positive experience of mutual inspiration. At best, it comes to a "dialogue", between presenting one's own music and listening to the music of others. P1 described: 'This could happen when you get to know someone and visit each other for the first time. For example, when I got to know Maren, we put on our favourite songs, both taking turns. That's also a sign of sympathy.'

*Music as a souvenir.* Songs are often related to a specific situation, an experience or episode of life. Music can trigger conversation about personal associations or bring back shared memories. For P3, for example, this especially applied to the songs of the 90s: "Some songs always trigger conversations. Because everybody knows them and everyone has got some specific memories. This especially applies to the songs from the 90s. Almost everyone has an association with these songs, like 'During this song I did this and that...'. This makes music a powerful souvenir. It can signify "good times" and initiate the exploration of associated memories, the literal soundtrack of one's life.

The interviews revealed some of the opportunities, concerns and practices of joint music listening. In the following, we used those as a lens for analysing and discussing available concepts and technological possibilities for providing music in a "social" way.

*Sharing music* is addressed by an increasing number of both experimental concepts and commercial products. For example, software applications like Apple iTunes Ping or social radios like *last.fm* support the discovery of new music by learning about the favourite music of friends. Based on detailed user profiles they also provide recommendations, i.e., artists classified as similar to one's favourites. The software *Social Playlist* [8] provides another variant of sharing music over a distance. Friends are listening to a shared playlist via their mobile devices. Songs are picked from each person's song collection in random order. As a special feature the application allows people to match songs with specific activities, and, thereby, picks songs depending on the person's current state (indicated to the system). Overall, there are interesting applications addressing the sharing of music in remote situations, but not face-to-face situations. There are also a number of concepts for the collaborative *creation* of music in face-to-face situations (see [http://modin.yuri.at/tangibles/](http://modin.yuri.at/tangibles/) for examples). But concepts for the mundane situation of joint music playing and listening on a private party, for example, are missing.

*Influencing music* is part of smaller private parties. Here, the specific approach to providing music may have profound effects on the party and the resulting social experience. One way to provide music could be to allocate that task to one person (e.g. the host, a dedicated DJ). Due to this assignment, this person cannot attend the event as the others, while the others only have indirect influence on music selection (e.g. by song requests). Another scenario would be to involve all guests in the selection of music, e.g. by alternating selection of songs on a computer. By that, each guest is exposed to the assessment of the audience, which can be unpleasant and be perceived as a "burden" (as described above). Finally, the task of music selection could be passed over to others outside the social group, e.g., turning on the radio, which of course excludes any participation of party guests. Other technologies like *iTunes DJ* aim at involving people into the procedure of choosing music, here, by providing a voting function for the next song. Voting, however, might not be the best approach to support social experiences. Jörg Peschel [10], for example, reported a critical attitude towards voting for music in a social situation: "You certainly need to have an affinity for such things. You would have to build collaborations just to make the next song a good one. And if you made it, everybody jumps up, giving high-five, 'Yeah, we did it!' – and the one who voted for another song leaves in a huff." [10, p. 38]. Voting implies competition and divides guests into winners and losers, and thus seems an unsuitable approach to support positive social experiences. This example reveals how technology – in this case, *iTunes DJ* – is able to shape experiences, and how particular functionalities or forms of interaction may create a rather negative experience. An example of a deliberate selection of functionalities and interaction in the context of social music experiences is the music player suggested by Nora Helms, Anna Kuperski and Simon Pfarr [5, p. 64]. People put their favourite music on their player and then bring it to a party. When several players meet, they create a combined playlist of all the titles saved on the individual players, which is played automatically. However, it misses some of the functions of common players. For example, it dispenses with a "next track" (skip) function. This is because each "skipped" title is at the same time a favourite song of one of the people on the party, who then may be hurt or angry about skipping "their" song. Another idea is a kind of welcome feature – whenever a guest arrives, the next song will be from the newly arrived player. What, however, is obviously missing in this concept is the possibility to take influence, and also the souvenir function of music is not being considered.

*Music as a souvenir* is hardly addressed by available technology, at least not explicitly, whereas the strong connection between music and personal memories is without controversy and widely discussed. Labelle [6], for example, collected stories tied to specific songs from 105 individuals and build up a "library of radio memory" for his
project Phantom Radio. Odom and colleagues [9] report on teenagers' self-developed routines to emphasise the connection between music and shared memories, e.g. replacing album art images with photos from shared events. Technology supporting the creation of digital souvenirs of social events, however, mostly focuses on the documentation of visual memories through photos or videos, sometimes enriched with associated sound, as suggested by the approach of Audiophotography [3].

Altogether, existing approaches do not exploit possibilities for social music experiences to their full potential. There are some interesting approaches on how to support single aspects, but a holistic concept that integrates all the requirements for truly social experiences is still missing. While the described phenomena of sharing music, influencing music and music as a souvenir, can basically take place in various social contexts, the present design case focuses on providing music at smaller private parties.

THOUGHTS AND EXPLORATIONS ABOUT A PLAYER FOR A SOCIABLE MUSIC EXPERIENCE

Our objective was to create a conceptual social music player, making joint music listening at parties a truly social experience. Its function, interaction and presentation needed to address sharing music, influencing music, and music as a souvenir. While commonly used technology for providing music at parties (e.g., pc, stereo) tends to be controlled by single individuals, we aimed at a more participatory concept that places all people (and their music) on equal footing. In addition, it should offer a "light", unobtrusive way for influencing music, integrated into the social situation, without demanding too much attention.

We started with different rough conceptual sketches. To get a better understanding of how these would "behave" in the targeted situation we performed a design improvisation [7, p. 49]. Our main interest here was to explore the consequences of a centralized (equal to common hi-fi equipment) versus decentralized (several small units) product architecture. We prepared dummies representing these two options. These were simple cardboard rolls (decentralized, see Figure 1, right) and a desk lamp covered by cardboard, offering slots to host storage media and projecting song titles onto a wall (centralized, see Figure 1, left).

A circle of six friends (four women, age range 25-27) were invited to a "party" and participated in the design improvisation. They engaged in role-playing with the "props" as if the dummies were fully functional products. Such an enacted simulation of the future use context is able to activate relevant emotions and cognitions tied to that potential experience, consequently providing quite informative insights. Questions and impressions (relating to functionality, interaction, etc.) could be expressed at any time during the design improvisation. In addition, there was a group discussion after the confrontation phase, where participants reflected on their actions, thoughts and emotions, similar to a focus group discussion. This process was subsequently run for both kinds of dummies, each lasting about 30 minutes. The whole procedure was videotaped and submitted to later thematic analysis.

Decentralized product architecture. In the decentralized scenario each "guest" got a "player" to bring to the party. On arrival, the guests took out their devices and wondered where and how to connect it. Due to sparse information about the exact functionality, various ideas about how to connect the devices came up. All these spontaneously generated interaction concepts had two aspects in common: Connecting devices was associated with some sense of physical proximity and there had to be some kind of feedback indicating a successful connection. As the party went along, the players became an integrated part of the event. One participant said "The small devices were just standing around here and there. Whenever there was a lull in conversation you could just take it and play with it." (P1). Like at any party, people were walking around, having a beer on the sofa, looking around for something to eat, talking to each other and laughing together. And the small devices were "following". A participant remarked: "Somehow they (the devices) gather at one point, aren't they? Well, but that's just what we do. Right now we are all in the kitchen..." (P2). At the same time the participants wondered, how the devices' "behaviour" could influence the party situation. "That's kind of funny how the music is actually moving along with the party (...) This might also work the other way round. If everybody stays in the kitchen but you want them to move to the living room, just take the small devices over there and people will follow them..." (P2). Besides everyday topics, conversations about music came up as well, often revolving around the discovery of new music: "You want to have a listen? Really cool music. I don't know who brought it but it sounds great!". P5 passing the device to P4, P4 listening in: "Nice! Who brought it?" "No idea. But let's just start it and hope somebody recognizes it...". All in all, the relationship between the participants and the decentralized dummies quickly became quite familiar. One participant even started talking to his...
device: "Ok, say goodbye to the others..." (P2 to his device on leaving).

**Centralized product architecture.** We then moved on to the exploration of the centralized concept. This time all "guests" received a (mock) "USB flash drive-like" dummy. On arrival, the USB dummies were placed in the centralized dummy. There were little questions about the interaction with the devices. The way how to place the storage media was obvious. Compared to the previous improvisation, group dynamics changed significantly. People were still walking around, talking and enjoying themselves. However, the centralized device didn’t become an integrated part of the event. In fact, it divided the group into active and passive. This shift was very distinct. One participant described "With that concept you have to stay at the place where the device is. It requires an active decision to deal with the music. I would have to leave my place here in the kitchen and stroll over next door." (P1) (At that time everybody was in the kitchen.). Another person commented "It reminds me of having a Playstation, an EyeToy or a Wii around. You attend to it, participate in playing for a while and then you leave again. It will be exactly the same with this device, that's how I imagine it. You go there, you deal with the music and then you leave again." (P3). Only some people were interacting with the device. For others, music and the playing device were just no topic anymore. Some even stayed in another room for the whole time. Asking for their reasons to stay passive one participant explained, "It depends on your character, I guess. If you don't like being the centre of attention, you just won't use the centralized device. As soon as you go there, you are definitely in the spotlight." (P3). Another person experienced fewer problems with entering the "spotlight": "I think it's fun, standing in front of it with others, selecting music together. It requires interaction between people as well (...) I think it is more fun (compared to a decentralized product architecture) because you also communicate with others and so on." (P4). The strict separation of active and passive guests led to concerns about "missing something". "Hey, what's happening here?" (P3, entering the room) "The party takes place here!" (P2) "Great and I'm missing everything..." (P3). In the end, the relationship between the party guests and the centralized device equalled that of a magnet, either attractive or repellant. The projection of song titles was not necessarily experienced as helpful: "A list of song titles and artists is no big help for me, it conveys nothing to me. I prefer just giving it a quick listen – if I like it, it doesn't matter what and whose song it is." (P1).

Altogether, the confrontation of participants with the different product architectures and the subsequent group discussion suggested a decision for the decentralized approach. It became explicit that the centralized product architecture is very dominant in the party situation. Since there is only one specific place to influence music, this often requires leaving a current social situation (e.g., a conversation). In addition, a centralized device may quickly become the centre of the event, including the ones operating it. This of course creates a high threshold for those who do not want to be in the "spotlight". Consequently, some people will exclude themselves and miss out on the potential of music as a source of positive social experiences. The centralized product architecture may even obstruct having a good party, since a division into active and passive guests becomes likely. Participants compared it to a console game or a PC and mentioned the destructive potential of those setups—it may change the character of the whole party. In contrast, the more cautious approach, of the decentralized product architecture incorporated music listening and selection more smoothly.

Based on these initial findings, we created and further tested functional prototypes (see Figure 2). It is beyond the scope of this paper to discuss all findings from those later try outs. However, four were notable for understanding design decisions regarding the final concept.

1. Participants preferred choosing music by "sample" instead of by a list of written titles and artists (they may not know). In addition, selecting by listening makes it easier to find a song fitting into the current situation.

2. Participants explicitly asked for a controlled instead of a random interaction with audio samples for choosing a song.

3. Participants requested a limitation of the number of songs per requests. This is to prevent long waiting lists and to ensure that a requested song still fits the moment.

4. Participants welcomed the lack of a display as an initiator for further conversations about the music played.

![Figure 2. Functional prototype (left); user confrontation in an early stage (right).](image)
MO – THE FINAL CONCEPT
The final concept, Mo, is a music player with an integrated speaker (see Figure 3). However, when several people bring their M0s to a party, they operate like a connected music system, playing the combined lists of songs of all the M0s present (see http://vimeo.com/37169860 for a demonstration of the concept).

The order of songs in the playlist is random, with all songs being played in full length. There is no skip function. As already discussed earlier, this is to prevent skipping someone's favourite song (which would be rude and may result in a not so positive social experience). Through the combined playlist, the typical role allocation of the host on the one side (being responsible for a positive music experience for all) and guests on the other side (having fewer rights and duties) is changed. Instead of passively consuming what the host prepares, everyone is now involved in music. Bringing a Mo requires thinking about and selecting music that fits the occasion. At the party, all guest and all their songs have equal rights. Through the combined playlist, everyone's tastes (and expectations about the evening) become apparent, or better, audible. The lack of a display further supports the social experience. Whenever you want to know the title of the current song, you may simply ask around who brought the song – hopefully, he or she knows. The lack of a display thus can be a trigger for conversations, a requisite for experiencing popularity (for the one knowing the song), or even a special kind of relatedness (if two people know the song and answer simultaneously). While the basic order of songs in the playlist is random, there is also an opportunity for actively influencing the music, namely by pre-listening songs and placing one (!) as the next in the playlist. To pre-listen the songs on a particular Mo, it must be picked up (see Figure 4, left). The main loudspeaker reduces its volume and a smaller speaker in the bottom plays the songs available. To navigate between the songs one can turn the bottom and upper part back and forward (Figure 4, middle). To select one song, the upper part can be pressed (Figure 4, right) and remains in its dented position until the selected song is played. Only then, Mo accepts a new song request. Hence, only a quite restricted and temporary influence is possible, which ensures that requests will be played soon and still fit the moment. It also prevents single individuals from taking over the party and creating playlists running for hours (and then leaving). To make Mo appear as a graspable object with enhanced possibilities for interaction – in contrast to a passive ordinary speaker – the regular hole pattern of the speaker dissolves at the sides, and turns into gripping surfaces (see Figure 5). The only further control is for the volume (and on/off).
The song request functionality provides the possibility to deliberately influence what's going on. Moreover, the pre listening draws upon peoples' wish to select music based on its sound instead of titles/artists. However, the actual pre listening activity itself is modelled as a private activity. This provides a save space for the exploration of songs, without immediate responses from others, such as "booooh", "oh no", or "not this again". In addition, private pre listening prevents interruptions or disturbances, typically taking place when people start wildly clicking through song collections before finally playing the song they want in full length. With Mo, the public, shared music experience always remains intact.

Finally, Mo addresses the phenomenon of music as a souvenir, in the present scenario, a souvenir of a fun evening with friends and their particular music. When being used in a social setting, Mo saves all songs played. Back home and connected to a web-enabled device, Mo visits webpages like grooveshark.com and completes the missing songs of the playlist. The playlist thus turns into a (shared) souvenir of the evening.

**CONCLUSION**

Mo offers a new way of joint music listening in a social setting (e.g., a birthday party). It is a concept designed with the experience, not with the technology in mind – technology, here, is only a mediator. Instead of leaving it to the people to appropriate technology to their needs, Mo deliberately shapes the intended experience. As Experience Design [5] suggests, our aim was to tell meaningful, positive stories, with functionality, content, presentation and interaction being used as materials to create and shape that story.

Designing for experiences of course requires a thorough understanding of the intended experience, including related phenomena, relevant needs, and the consequences of particular design decisions. In the present case, the interview study revealed the potential of music for positive, social experiences. It also revealed how such moments may be destroyed if technology implies social tensions (e.g., voting concepts that split people in winners and losers, concepts that allow skipping others' favourite songs). The design improvisation further explored the consequences of alternative concepts, and demonstrated how each particular design detail shapes the resulting experience. Only after this intense examination of the envisioned social experience, we decided on the final concept's functionalities, and limited these to those actually supporting the intended experience. Common elements of most music players (e.g., a display, a skip button) are thus missing. All this is because Mo was foremost designed as a creator of social experiences rather than as a music player.

The present design case demonstrates that even in a field, which may be perceived as highly saturated (here: consumer electronics) new opportunities for design become apparent once we start thinking about creating meaningful experiences [2, 5] instead of focusing on technical solutions to seemingly apparent problems. The potential for innovation thus lies not only in technical solutions but in the deliberate design for meaningful experiences, in terms of function, interaction, and presentation.

**REFERENCES**


