Choosing a personality for your car

Directions for how deep smartphone integration enables new experiences in and away from your car.

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1. ABSTRACT

The immense success of smartphones and increasing sales numbers has created new ecosystems and opportunities, with regards to user experience, software development, communication and social encounters. In this paper we present an excerpt of the results from a project focusing on integration between smartphones and cars, with regard to new user experiences and design opportunities made possible by this coupling. We describe an academic experiment on cars as agents with personalities, present our results and discuss how the design space widens because of the shift in technological presence in our everyday lives.

2. INTRODUCTION

The results in this paper comes from a project, taking place in the autumn of 2011. The project focused on the integration of smartphones in electric cars and was conducted in collaboration with ECOmove, a Danish company in the process of building an electric car, the QBeak [1]. The QBeak concept differs from most other electric cars in several ways, but most notably in this context is the use of a smartphone as the instrumentation. QBeak has no conventional dashboard with knobs and displays spread out in front of the driver, instead all controls and information are placed inside the steering wheel in a non rotating panel in which the driver's smartphone is docked. Operation of the controls is laid out on a number of physical buttons on the panel as well as on virtual controls on the smartphone. All primary information presented to the driver, e.g. speed and battery level, is also placed on the smartphone. Furthermore the smartphone works as remote control and ignition key for the car. This effectively makes the smartphone a part of the car, which induces new relations between personal devices, in this case a smartphone, and cars.

The project covered several aspects of the smartphone integration, but the part we will be covering in this paper are the new possibilities in terms of user experience enabled by the strong relation between car and smartphone. In particular we focus on a certain possible way of utilizing this relation, namely by letting the car act as an agent with a personality in order to offer the driver new value with respect to user experience, convenience and sense of ownership.

In the following section we take a look at some of the related work and literature, followed by a section on the design space covering this topic. In section 5 we present an experiment and its results, which we use in section 6 to discuss the new design space.

3. RELATED WORK

The design of user experience is a wide and growing research subject and includes areas and backgrounds such as Computer Science, Industrial Design, Psychology, Ethnography and others. User experience can be directed towards many different kinds of experience, whether it be cuteness [8], efficiency as in classical HCI or aesthetics [9, 11].

In this paper we focus on the extension of the design space, made possible by recent advances in personal mobile technology and build upon research areas such as social computing [6], pervasive computing [10] and aesthetic interaction [9, 7] among others. By combining pervasive technologies with elements of social computing we hope to extend the user experience with social and aesthetic elements.

The prototyping of experiences requires a certain mindset and an understanding of the user in context [2]. Combining this with a technique inspired by [3] we use the concept of extreme characters, or personalities as it is in our context, and build upon that in the prototyping and experimentation process in order to design new experiences and map new areas of the design space. Other techniques relate to this challenge as well, such as [5].

Our experiment imitating an intelligent digital agent, relates to the broad field of artificial intelligence and agents. Yorke-Smith et. al. [12] present a framework for the design

Experience Design Means						
Means	Visual	Auditive	Aromatic	Tactile	Kinesthetic	Communicative
Automotive Design	Shape, Color, Size	Engine sound, Auditive feedback, Wind noise	Interior odor, Exhaust fumes	Material quality, Vibrations, Button feel	Steering response, Acceleration/ Deceleration forces	Driver support, Coaching, PA-functionality

Table 1: Design Space Toolbox

of an agent resembling the one imitated by our experiment. Besides the technical difficulties in creating a well functioning agent, more work needs to be done in the area of user modeling and sensing [12].

4. DESIGN SPACE

Designers have gone far and wide to achieve the desired experience for the users, whether it be the right smell of the leather in the cabin, the sound of the engine or the handling in corners. As we introduce a new way of communicating with the car through a smartphone, both in the car and away from it, we are introducing a sixth means, that we call the Communicative means. See table 1.

Designing for the communicative means covers the communication with the car in ways traditional Visual and Auditive (and some times Tactile) feedback cannot do. It relies on human cognition and the way humans think and feel about the communication is a key factor. This means that the communication has to have a meaning and a dialogue between the car and the user. Our experiment is based on this sixth mean, to explore one of these new forms of communication between user and artefact. In the context of car design, examples of communicative means cover helpfulness or driver support, coaching and learning as well as personal assistant functionality.

5. EXPERIMENT

Inspired by [3] we identified a list of personalities based on different kinds of cars and their users [4]. The personalities were selected on the basis of the use and purpose of a range of cars and focused on reflecting the user's interaction with the car. The individual personality features were exaggerated with a view to clarify the personality and to evaluate how the users understood the personalities.

Each of the personalities were based on a specific car or type of car and a set of user values and a personality stereotype was identified as shown in table 2

To get a better understanding of the experience posed by giving a car a personality and having it follow a user's smartphone, we set up a test of some of the personalities. Through this test we wanted to test both if it was possible to create a connection between the smartphone and the car when the user was not in the car, and at the same time explore the design space created by adding personality to the car.

5.1 Method

The test was carried out with the same users who had already taken part in our test of the user interface earlier in the process. The purpose of the first test was to prototype and brainstorm on the interaction with a smartphone mounted in a car, and was carried out before the personalities were introduced. These users were chosen as they already had an understanding of the car, and had some kind of relation to it as they had helped design some of it. Therefore, we found them better fit to understand the concept of communicating with a car with a distinctive personality.

To test the experience we chose two of the personalities to test with, the Butler and the Activist. We then authored a scenario that lasted a couple of days for each, describing the communication between the user and the car. It was chosen to run the tests on the user's own mobile devices, and therefore the test was carried out via text messages. This was chosen as we found it to be more important that the users experienced the relationship with the car via their personal device, than the interface looking exactly as we wanted it to. On this basis the scenarios were modified to fit with text message communication, having both information on the thought situation and the communication from the car itself.

Before the test was started the users were explained how it would be carried out and how the car would communicate with them. The concept of an intelligent car with a personality was also explained, emphasizing that it was the experience rather than the personalities themselves that was to be tested. The test was conducted with the four test users getting the personalities in pairs, so that two got the Butler and two got the Activist, without the users knowing which they were given or even that it was these two we were testing. The first part of the test ran for two days, where the respective scenarios were played out, with the users receiving text messages from the car and taking notes about their reaction to them. After the first part, the users were given a break for a few days and then the personalities were switched between the two pairs and the test started over. This was done to see if it was easier to understand the communication from the car the second time around, even though the personality had changed. Testing the two personalities in parallel was done to be able to evaluate the experience without a better or worse experience in the second part of the test being due only to changes in personality.

5.2 Results

Our evaluation of the test was conducted as semi-structured interviews on how the test users had experienced the communication with the car. The interviews focused on the experience with the personalities, the experience of an intelligent car and the use of a smartphone as an interface to the car.

Not surprisingly, the experience of the different personalities

Car Personalities				
Car type	Family Car 	Sports Car 	Electric Car 	Rental Car 
User values	Safety, Practicality, Economy	Excitement, Status, Action, Speed	Economy, Pollution, Environmental Load	Availability, Functionality, Willingness, Desirability
Personality /Stereotype	The Butler. Helps in everyday situations	The Mistress. Fulfills a desire for action and passion	The Activist. Tries to educate and convince	The Prostitute. Fulfills basic needs or exotic desires

Table 2: Car Personality Matrix

was very different between the users. Those who really liked one of them did not care much for the other, which was one of the reasons why these two very different personalities were chosen, and also why we had chosen test users with different backgrounds.

One of our test users, Jakob - 26, is a busy man, running his own company while being a husband and a father, and is a heavy user of calendars and schedules. Therefore, it was no surprise that he favoured the Butler personality of his car, as it helped him with the everyday problems of planning and arranging everything and reminded him of upcoming events. Although he liked the way the car assisted him in his everyday life, he did not see why it had to be the car, as it could just as easily be a virtual character following him in the cloud and on his smartphone. This suggested that the coupling between the car and the personality was not as clear as we hoped or that this kind of personality did not fit well with the image of a car, but could also be a result of the absence of an actual physical car for the users to relate to. Jakob though stated that it was clear to him that the communication came from the car, and that it could at least make sense to have the virtual character integrate that well with the car. At some points during the tests, Jakob tried to respond to the messages from the car, even though he had been informed that this was not possible, or at least that the response would never be received or seen. In spite of this he replied, hoping for a response and clarification of a question he had, suggesting that not only communication from the car but also a dialogue with the car could be desirable.

The only female test user we had, Maria - 20, on the other hand did not like the Butler personality very much, or at least did not see any need for the information given by it and therefore found the messages irritating. But opposite of Jakob, Maria liked the environmental Activist personality and enjoyed receiving messages from it. Her reason for this, was that the messages helped her do some good for the environment that she really wanted to do, but in her daily life did not know how to do and often forgot to think about. She even stated during the interview that on the second day with the Activist personality, she was looking forward to new messages from her imaginary car and was expecting certain types of messages.

The most important result from our tests was that it was possible to create a relation between the car and the smartphone, and through a character with a distinct personality create a certain experience for the users. Even though the test setup had some limitations in the possibilities for the test, the users experienced the personalities to an extend that resulted in valuable feedback for the rest of the design process.

6. DISCUSSION

Our work with experimenting with the car as an intelligent agent mediated through a user's smartphone has given us some clues on how the new design space could be explored. Using personalities in relation to cars has not only opened new possibilities for designing the interface of the car but also the user's experience with the car, inside it as well as away from it. The suggested use of distinct characteristics in these personalities made it easy for the users to understand the differences, and give qualitative feedback on their experiences.

In relation to the design of new experiences with the car, our work has suggested that there are several prior to this article un-explored possibilities in designing an extended user experience by integrating a smartphone. Our tests showed that using the smartphone while in the car, gave better meaning to the possibilities of personalizing everything in the car, as the personal device becomes part of the car and vice versa. And this relation could be maintained while away from the car, by having a deep integration between the car and the smartphone communicated via some kind of intelligent agent.

Using an intelligent agent with a personality for the car, could have some downsides though. As one of our test users mentioned, it could be hard to argument why it should be the car that comes with this feature, and not just something that could integrate with the car, along with almost everything else. On top of that, there are some general problems when introducing designs that have some sort of Artificial Intelligence. First of all there is the implementation of the AI, in both gathering data and creating a meaningful output, which even though computing power has become almost indepletable and the amount of information gathered already is huge still struggles to reach a level where it actually works and is not just a gimmick. Secondly, users may have experienced dissatisfactory AI-systems in the past and have grown to distrust or dislike products claiming to have an AI. Tendencies with for example Apples Siri, introduced with iOS 5

and the iPhone 4S, could introduce a change in the acceptance and use of such products, however it is still too early to judge or conclude on the success and practicability.

6.1 Perspective

We have used personalities in our project on the design of a possible new kind of experience with regards to car design, but see great perspectives in using personalities in design processes in general. Taken out of the context of car design, we see a potential for using products with personality as a part of the design process, to explore the design space in new ways. When brainstorming with users, the distinct personalities makes it easier to communicate ideas and introduce crazy ideas, as long as they correspond to the personalities. The use of personalities in other design processes does not only apply to designs where the final concept needs a personality, but could also work as an explorative brainstorming technique for any design with some kind of user interaction and as a communicative tool for setting up larger brainstorming sessions with possible end-users.

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