
Experience-Driven Design of Traveler Services in the Smart City

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Abstract

When people enter a city as visitors (tourists or business travelers), they have conscious or unconscious expectations of the experience they will have about the city. Arrival spots such as railway stations and airports have a significant role in building the first experience of a city. With the emergence of smart city infrastructures and services, various kinds of user experiences can be enabled to travelers. Many smart city projects have already taken a user-centered design approach. However, so far the developments of smart city services have not focused on the enablement of specific experiences but rather, on novel functionalities or technological solutions. In this paper, we argue that experience-driven design can be a viable approach to create enticing smart city services. We present current challenges and initial results of an interview study of traveler experiences in the Tampere railway station area. We also discuss our plans to work with local SMEs to help them develop successful ubiquitous smart city services based on targeted user experiences.

Author Keywords

Smart city, travelers, ubiquitous services, experience-driven design.

General Terms

Design, Human Factors.

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Introduction

Smart cities have been studied across the globe for about a decade. Several research programs have created infrastructures and services for various user groups, including citizens who live in the city and people who visit the city [6][15][7].

Infrastructural components of smart city developments have included public displays, city-wide WLAN networks, and embedded sensors for contextual data collection. Examples of application domains are smart tourism, smart learning, natural resources, transportation, building information and government services [4][11].

We consider “the city as the social network, living community and connected organism by the support of new information and communication technology” [3]. Furthermore, different places in the city offer different types of functionalities and interactions, and these, together with the physical and social context, provide a range of experiences to the people in the city.

Our focus is on travelers who come to visit the city of Tampere. More specifically, our aim is to support the development of the Tampere railway station area which is going through a major restructuring in the coming years. Our research and development project will support the design of novel mobile and ubiquitous services for the railways station area and its vicinity. To this end, we are working with local Small and Medium sized Enterprises (SMEs) to create services which can provide positive experiences for the travelers.

Experience-Driven Design of Smart City Services for Travelers

Our approach to the development of mobile and ubiquitous services is based on Experience-Driven Design [12]. This approach differs from traditional user-centered design in the sense that in addition to understanding user needs and requirements, the design is based on specified target experiences such as excitement, calmness, connectedness or fun.

Experience-driven design has been defined as [12][2]:

- Taking human experiences as a starting point; “valuing the whole person behind the ‘user’” and focusing on the key design elements: context, interpretation, participation [17].
- Using the targeted experience, and stories around them, as central concepts of the design vision [5].

The targeted experiences thus need to be based on users’ genuine needs, and not (at least solely) on novel technology-based concepts. When designing services for travelers in a city, this means that we start the design by understanding the travelers’ needs and related, expected experiences in the specific places they visit in the city. Experiences can be either pragmatic or hedonic in nature, leaning on task completion or the emotional value offered by the service [5].

While many of the existing smart city projects do take users into the design process [1][14][16][10], we are not aware of any service research and development projects that take specific experiences as a starting point. This is the novelty of our approach and position of this paper.

Traveler Experience in Tampere Railway Station Area

In the coming years, the city of Tampere is going through a major restructuring of its city centre. The intention is to improve the usage of various parts of the city centre which are currently underused, including the railway station area. The general goals are to make moving in the city centre more fluent as well as staying in its various places more pleasant and entertaining. Supporting services – both non-electronic and technologically augmented – form an essential part of making such positive change happen.

Challenges

The railway station is one of the central nodes of Tampere city centre. Currently, there are some inherent challenges in the Tampere railway station area with which affect the traveler experience:

- lacking or unknown services; both non-electronic such as eating places and shops as well as electronic services which help travelers in their needs,
- unattractive entries to various parts of the building and buildings and areas next to it,
- lack of comfortable waiting places and
- missing information displays and signs.

In general, these issues lead to rather unenticing and even frustrating, or at least neutral and unmemorable experiences in this part of this essential place in Tampere city centre.



Figure 1: Tampere railway station waiting hall, which offers some services but is rather unentertaining.



Figure 2: Corridor to the food court, which is found only by a small number of travelers.



Figure 3: One of the back entries to the station, with rather unattractive look.

Initial User Study

We conducted short contextual interviews in the railway station to explore experiences that people desire to have in the station area and to investigate current problems in the area. The participants were recruited on the spot. Totally 31 people were interviewed in 5-10 minutes long interviews.

26 of participants were passing through the railway station on their way to somewhere, 3 were spending time there and 2 were escorting someone to a train. We asked what kind of general experience the interviewees were expecting when visiting the railway station were divided as follows: comfortable experience 53 %, efficiency 17 %, and 33 % wanted both efficiency and comfortable experiences.

Theme/need	No of mentions
Comfortable waiting places, places to sit in peace	12
Quality restaurant or café to spend time in	8
More information and displays (trains, connections and the shops in the area)	8
Designing and developing the area into more enjoyable (things to do, cleanliness, overall atmosphere, security)	6
Entertainment for children, games and places to play	6
Special services (money exchange, book shop, cash withdrawal)	5
Online services (free Wi-Fi, information, mobile apps)	5

Table 1: Development needs in the railway station area.

The more specific kinds of experiences and services the interviewees were expecting in the railway station area were related to the themes presented in Table 1.

Participants thought that currently railway station is an area where people go through efficiently and fast. The problem is that people are not aware of the services in the area. People wanted to have easily accessible information on what is happening in Tampere area. Additionally, a possibility to add event information and content on their own to the public displays was seen as interesting idea. Parents with children desired more entertainment for the children especially, since the railway station area is currently boring for the children.

These initial results give a rather binary image of the experiences (comfort – efficiency), and more detailed understanding of experiences is needed in order for them to be used as design targets. We are currently conducting 15 in-depth interviews with the users of the railway station area to understand the more specific needs and experiences of the travelers and visitors.

Working with SMEs: How to Incorporate Experience Design into their Development Approach?

The project includes collaboration with several SMEs to incorporate experience design methods and thus improve new or existing services. There are several possibilities how to influence the travelers' experiences. Usually the travelers appreciate convenient travel information. Information about the local activities or sightseeing could be provided through virtual city tours. These are examples of possible services which are developed during the project.

A challenge with SMEs is that they typically do not have much skills in experience design or even user involvement. Therefore, a special attention needs to be taken to develop some new procedures or practices.

Playful Experience (PLEX) framework [9] is one method to make intended experiences concrete for developers. There are two idea generation techniques associated to PLEX to help developers in concept design. Alternative methods such as Contextmapping [13] will also be explored to create memorable city experiences.

Another area of interest which may support experience-driven design is open data. In Tampere region, there is a wide variety of open data available to create services. Finnish regime has made a decision to open all public data, and Tampere regime strongly investing in opening the public data. This provides a new foundation for user experience design for smart city applications.

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