TrainRoulette: Promoting Situated In-train Social Interaction Between Passengers

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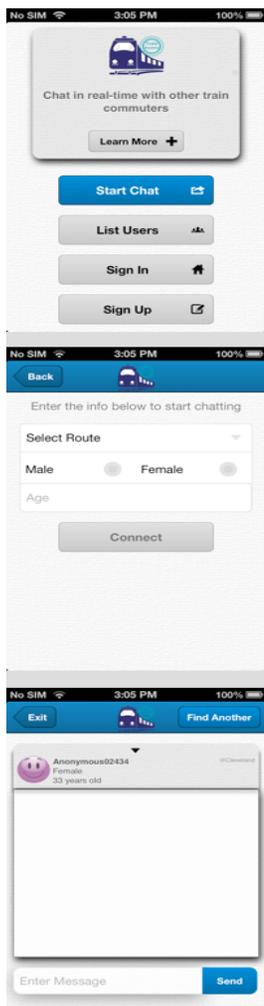r.andry@qut.edu.au

Abstract

Travelling by public transport is usually regarded as boring and uninteresting. Refraining from talking to the stranger next to you may be due to limitations that are self-imposed and further corroborated by social expectations and cultural norms that govern behaviour in public space. Our design research into passenger interactions on board of urban commuter trains has informed the development of the *TrainRoulette* prototype – a mobile app for situated, real-time chats between train passengers. We study the impact of our design intervention on shaping perceptions of the train journey experience. Moreover, we are interested in the implications of such ICT-mediated interactions within train journeys for stimulating social offline interactions and new forms of passenger engagement.

Author Keywords

Public transport; trains; rail; interaction design; urban informatics; social offline interactions; engagement

ACM Classification Keywords

Human-centered computing → Empirical studies in HCI; Empirical studies in interaction design

Figure 1 – A screenshot showing the initial interface, the data entry interface, and the chat interface of the *TrainRoulette* prototype.

Introduction

Innovation in the context of public transport has been mainly directed at improving the logistic and operational aspects of the service. As a consequence, the ability to seamlessly accrue and analyse data, and from that offer valuable predictions has seen significant advancements. Arguably, we have created a new way of using public transport, one in which ICT works as a shaping force. Nevertheless, we still struggle to offer a service that is able to rival the attractive elements of private transportation, such as commodity, comfort, and personal attachment.

The point of departure for our study is based on the thought that the activities that passengers undertake as they travel are a consequence of underlying psychological needs. Being able to tap into those needs might work to help create personally meaningful engagement. This preliminary work employs a multi-method approach to collect data and presents the TrainRoulette prototype – a mobile application that promotes anonymous, digital interaction between co-located train passengers. It follows closely the concept of random one-on-one interactions promoted by *ChatRoulette*, but works exclusively with text. Our aim is to further the understanding on how ICT-mediated interactions might work to mitigate existing social-cultural restrictions that make activities such as talking to strangers uncommon within trains.

Related Work

Despite major improvements in public transport and the increase of ICT-mediated activities within transit vehicles, this does not necessarily mean that passengers are enjoying their journeys more [3]. This may be related to the lack of significance that most

activities have towards the underlying intrinsic needs that motivate human action. Hassenzahl refers to these higher-level motives as *be-goals* [5, p.44]; they are closely related with the conceptualisation of the Self, and indeed if the aim is to provide a better, situated experience, then these needs are essential.

The promotion of specific psychological needs, such as competence and relatedness, is known to increase subjective well-being. Nevertheless, promoting such needs is not always straightforward, especially within public spaces. It is widely appreciated that invisible barriers shape and mould our behaviours, as we apply distinct *acts* according to the situation at hand [4, p.91]. This renders interaction with strangers in a socially restricted space such as a train, troublesome.

In the context of urban train journeys we clearly lack understanding on how to produce more engaging journeys altogether [1]. This study argues that the path to follow should be one that takes into consideration the aforementioned intrinsic needs that passengers can relate to. From that perspective, we hint that ICT-mediated social interaction between in-train co-located passengers might have bearings on the way that people interact within trains.

Methodology

We followed an exploratory qualitative-oriented multi-method data collection strategy, comprising both observations and focus groups. Adding to this, we produced the *TrainRoulette* prototype. *TrainRoulette* works by restricting interaction to the physical space within the train, as it requires that passengers are connected to the in-train Wi-Fi infrastructure and that they indicate the route that are travelling in. It works

Figure 2 – The identification of specific themes that fall under the Restrictions category. Restrictions herein are either one of two types: internal or external.

similarly to the ChatRoulette[1] concept, promoting one-to-one random interaction, but it exclusively uses text for interaction. Our direct observations totalled 7 hours, and spanned across several days of the week and times of the day. Additionally, we performed two focus groups: one composed by 6 HCI and Design experts that lasted for 1 hour, and one composed by 6 train passengers that lasted for 1 hour and 30 minutes.

The observations were performed early in the research process, and the process was grounded on a series of *synthetising concepts* that stemmed from the existing literature. Their use allowed for a more focused observations to take place. The categories used were: Activities; Habits; ICT usage; Concerns and doubts; and Interrelationships. In regard to the two focus groups, in the first one we ran a usability exploratory test, and in addition gathered perceptions about the use of the prototype in a real-world scenario. For the second focus group, we first collected data about how participants currently experience and perceive their journeys. Consequently, participants were asked to use the prototype, assuming they were in a normal commuting train journey.

The collected data was subject to a *thematic analysis*, where a perspective of Activity Theory and that of hierarchical motivational action was taken into account [4, p. 54]. As such, the categories that emerged where both based on the referred theories, as well as from the data itself. In sum, passengers perform *activities*, in which the undertaking of these activities results in *perceptions* towards the service. Usually, most

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[1]http://www.nytimes.com/2010/02/21/weekinreview/21bilton.html?_r=0

activities – undertaken or not – are subject to existing intra-personal and external *restrictions* (see Fig.2 for identified restrictions).

Discussion of Results

Unsurprisingly, the data shows that the participants undertake a series of activities while travelling by train that we divided into two categories: physical and ICT-mediated. Activities such as physical social interaction, are mostly subject to intra-personal restrictions relating to issues of confidence and doubt, but also of expected behaviour in the societal space [4, p. 91].

Social interaction is commonly ICT-mediated, with passengers *going away* from immediate surrounding physical space [4, p. 94], and contacting familiar others either through texting, phone calling, or social media. Physical social interaction happens mostly when passengers travel with someone. The data also suggests that social interaction is an activity that is sought when trying to mitigate feelings of boredom, which increases with the length of the journey.

Wanting to know about fellow passengers, what they do, and what their interests are was a recurring theme. Such curiosity about the environment can be related to the need of competence. As social norms dictate the expected behaviour inside trains, it can be hard to undertake activities to satisfy such curiosity.

Additionally, and referring more concretely to the *TrainRoulette* prototype, a participant raised concerns relating to anonymity in interacting with someone in a shared space, but the other participants saw it as interesting, and contributing to their sense of curiosity to figure out with whom they were travelling with.
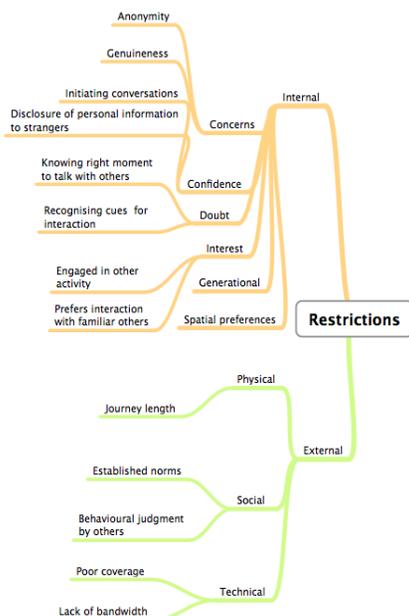
Recommendations & Future Work

The exploratory nature of this research phase called for in depth qualitative methods but relatively small numbers of participants. The results attained allow us to suggest some preliminary design recommendations for applications aimed at promoting in-train social offline interactions. We argue the following:

- Social interaction – even between strangers – taps directly into the intrinsic need for relatedness [2], and as such it offers a valuable opportunity for producing further engagement in train journeys

- Limiting interaction to the physical space is advantageous, as it corroborates the concepts of competence and curiosity. People become interested in knowing who is sharing the same space with them

- Promoting semi-anonymity by requiring submission of information such as age, gender, and interests is useful, as it works to enhance feelings of relatedness and curiosity. People relate more easily to others that share common interests [2]

- Genuineness should be considered as it contributes to the sense of security, another intrinsic need [5, p.46]. This might be attained by connecting the user to an existing account – such as Facebook or Twitter – but ensuring that the details do not transpire through the application to others

The future direction of our work consists of extending the data collection and the refinement of the prototype. Given the iterative nature of our research, design, and evaluation stages, we will modify the prototype according to the input collected from the focus groups, and additionally refine our focus group design to account for the specific guidelines presented herein.

Acknowledgements

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