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# FlyTalk: Social Media to Meet the Needs of Air Travelers

**Kagonya Awori**

Carnegie Mellon University /  
University of Madeira, Portugal.  
iHUB research, Kenya.  
sawori@gmail.com

**Emme Clark**

Carnegie Mellon University /  
University of Madeira  
9020-105 Funchal, Portugal  
emily.br.clark@gmail.com

**Andreia Gonçalves**

Carnegie Mellon University /  
University of Madeira  
9020-105 Funchal, Portugal  
andreia.susanaa@gmail.com

**Troy Effner**

Carnegie Mellon University /  
University of Madeira  
9020-105 Funchal, Portugal  
effnerd@gmail.com

**Justine Yang**

Carnegie Mellon University /  
University of Madeira  
9020-105 Funchal, Portugal  
yangjustine@gmail.com

**Ian Oakley**

University of Madeira  
9020-105 Funchal, Portugal  
ian.r.oakley@gmail.com

**Nuno Nunes**

University of Madeira  
9020-105 Funchal, Portugal  
njn@uma.pt

**Abstract**

The aviation industry plays a vital role in supporting economies and connecting people worldwide; it is a cornerstone of modern life. However, user experience of air travel is often marked by frustration, stress and confusion. Indeed, over the last decade, traveler satisfaction with air travel experiences has steadily declined. This paper describes fieldwork in the form of 63 interviews (using a range of user research methods) that aims to understand the needs of air travelers. Key insights from this process are presented and a conceptual system design, based on connecting travelers using existing social media systems, is introduced. Ultimately, this paper argues that applying innovation in social media technology to air travel has the potential to improve user experiences and reduce industry costs, making travelling smoother, cheaper and more satisfying.

**Keywords**

Air travel; airport; user-centered design; social media

**ACM Classification Keywords**

H.5.2 [Information Interfaces And Presentation]: User Interfaces-user-centered design;

**General Terms**

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## Introduction

The aviation industry transports over 2.2 billion passengers annually and accounts for approximately 7.5% of the world Gross Domestic Product (GDP). It supports over 33 million jobs worldwide. Unlike road, water transport and rail industries, which rely heavily on taxation and public investment subsidies, the aviation industry covers its own infrastructure costs. Airports, in particular, achieve this through charges to airlines and air navigation service providers. These fees, which in 2006 amounted to USD 42 billion, are typically passed on to air travelers as compulsory ticket charges [1].

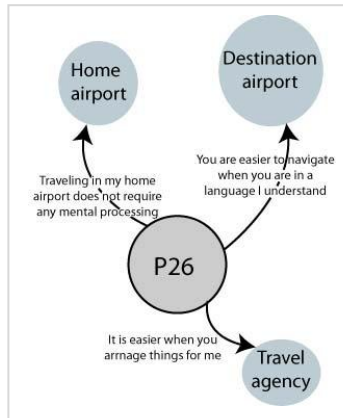
Consequently, air travelers, more so than corporations or governments, play a foundational role in sustaining the air travel industry. Despite this, travel remains a frustrating and often unpleasant user experience; research shows low levels of traveler satisfaction. According to the American Customer Satisfaction Index, airlines rank lowest among all industries when it comes to the number of satisfied customers [2]. This report also indicates that business travelers, who pay premiums for perks, are the least satisfied with the air travel experience.

These statistics highlight a conundrum. Air travel, frustrating and stressful, is often marketed and sold in terms of luxury, particularly to passengers travelling above economy class. Indeed, many airlines compete with one another on the scale and scope of the benefits they provide travelers: improved and streamlined purchase and check-in processes; configurable booking and meal options; more comfortable ergonomics. This paper argues that such efforts are often misdirected. This is either due to a failure to capture and understand genuine user needs in travel scenarios, or a failure to

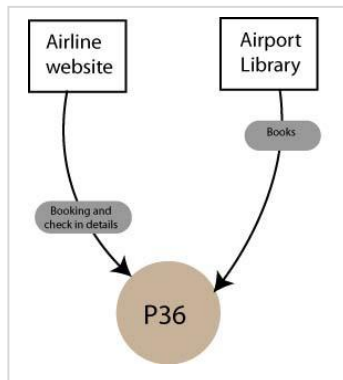
adequately create solutions when such needs are recognized. To address these issues this paper describes a protracted process of fieldwork studying user needs and problems during the process of air travel, and in particular whilst at the airport. It synthesizes the data captured into a set of key findings and briefly describes the design of a social media application intended to mitigate many of the problems and frustrations encountered. The ultimate goal of this work is to improve the air travel experience, making users more satisfied, which we argue can have knock on effects of driving up revenue for the industry whilst simultaneously lowering prices for the traveler.

## Related Work

Travel activities have long attracted the attention of HCI researchers. The development of handheld devices spurred research in areas such as digital tour guides [4]. Context, particularly in terms of location is a key element of this work, and indeed, navigation and way finding in unfamiliar environments continue to be important standalone areas of investigation [e.g. 5]. Researchers have also studied travelers in situ, leading to insights and guidelines relating to user needs [6]. Many commercial services also seek to support travelers: Dopplr ([www.dopplr.com/](http://www.dopplr.com/)) coordinates travel plans and highlights collocated friends; TripIt ([www.tripit.com/](http://www.tripit.com/)) manages and maintains itineraries and travel documentation. However, despite industry reports of significant traveler complaints relating to aspects of airport service, such as flight problems, poor customer service, delays and waits at check in and baggage, there is little academic research exploring user needs in this scenario and how mobile digital technology can be best deployed to address them.



**Figure 1:** An example cultural model showing the values and sentiments of a single research participant, P26



**Figure 2:** An example flow model showing the flow of information between a single research participant, P36, and other travel entities.

## Research and Findings

User research sessions took place between February and May 2011 in three European airports: Funchal (Madeira, Portugal), Lisbon Portela (Portugal) and Amsterdam Schiphol (the Netherlands). These sites were specifically chosen to capture travel experiences at small, medium and large airports. All three are international airports and, according to 2010 figures, Funchal handles approximately 60 flights each day, Lisbon roughly 400 and Amsterdam 1100 [7]. Schiphol airport also represents likely best practices in the industry; travelers rate it as a top European airport [8].

The fieldwork took place during 4 sessions at the airports. A total of 63 travelers participated using seven different methods; guided storytelling (7 users), retrospective interviews (21 users), fly on the wall (3 20 minute observations sessions), make tools (13 users), diary studies (11 users), bodystorming (3 users) and personal inventory (7 users). Most participants completed a session involving more than one research method and, as the series of studies proceeded, methods were included and excluded according to what was effective and in order to focus on different aspects of the travel experience. Research participants were not compensated.

Adopting the techniques of contextual inquiry, data collected from the research was consolidated into cultural models (Figure 1), flow models (Figure 2), sequence models (Figure 3) and affinity diagrams (Figure 4) [9]. These models made it possible to spot patterns and themes in the research data. Seven key findings relating to the needs of the air traveler were ultimately identified. These are described below.

### 1. Loss of Control

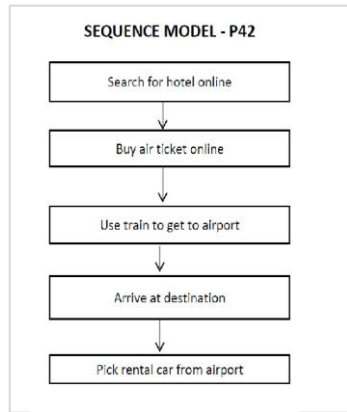
Travelers are often placed in situations of powerlessness. Our research indicated these range from irritating or inconvenient (one participant had to dump his newly purchased liquids because he did not know he had to go through security twice before boarding) to the genuinely stressful (e.g. long delays in uncomfortable airports). These situations are sufficiently common as to affect most travelers. Beyond any physical discomfort, participants reported that their inability to improve or resolve their situation was a key aspect of their distress.

### 2. Information Overloads and Lacks

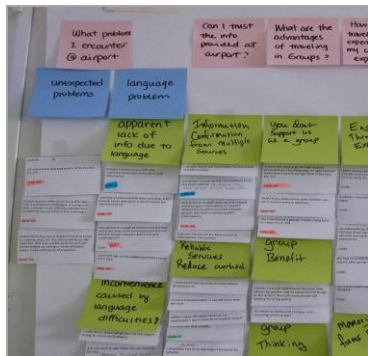
Travelers need to deal with a vast amount of highly specific information. They perform multiple tasks: managing their itinerary; handling their travel documents and baggage; navigating the airport; arranging ground transportation; dealing with specifics of currencies, dietary requirements, accommodation and shopping. In our research, travelers reported they were overwhelmed with information and that it frequently became unmanageable. On the other hand, there were also reports of information lacks. In particular this related to factors specific to individual airports and their procedures: inadequate documentation of ground transportation options or security processes. Lack of this highly local, contextual information was reported to cause significant frustrations.

### 3. Complex and Variable Airport Procedures

Variations in airport procedures were reported as a major cause of traveler frustration. This factor relates closely to information lacks and is best expressed through an example. Travelers reported few frustrations in airport security procedures with which



**Figure 3:** An example sequence model listing the steps a research participant P42, followed for their trip.



**Figure 4:** Part of a consolidated affinity diagram

they were familiar. On the other hand, unexpected processes or events were reported to cause irritation, embarrassment, anger and discomfort. For instance, one traveler reported annoyance that she had to wait in line for an extra half hour because she had oversized luggage that needed to be checked in separately; she was unaware of this security requirement. Literature supports this distinction; Norman suggests that unexpected burdens lead to negative experiences while expected burdens can be tolerated [10].

**4. Airport/Airline Relationships are Misunderstood**  
Travelers purchase tickets from airlines, but between ticket purchase and the boarding gate, they interact primarily with airports. The borders between these spheres of responsibility are not clear to many travelers. For example, several participants blamed airports for flight delays that were attributable to airlines and vice versa. This caused them to seek support and compensation in the wrong places. Several participants also reported confusion in the relationships between airlines: via code sharing, tickets bought with one company lead to flights with another and, in cases where things go wrong, travelers can become confused as to who is responsible.

**5. Homogenized experience**  
Travelers come from highly diverse backgrounds, preferences and characteristics. Participants reported feelings of vulnerability whilst in foreign airports with cultures or languages different from their own. These participants desired that the airport be an extension of the comforts they were used to at home.

**6. Poor Technical Infrastructure**  
Participants cited poor support for charging electronic devices and confusing Internet connectivity options as

major annoyances. Many travelers use digital devices throughout their journey in order to get work done, to connect with loved ones, to manage information and to fight boredom. However, many struggle to keep their devices charged through long haul flying experiences, which typically span over several hours, and face bewildering arrays of internet service options within airports. These practical problems clearly contributed to user dissatisfaction.

**7. Waits and Boredom**  
Waiting is one of the most visible and, unfortunately, memorable aspects of airline travel experiences. Participants reported irritation during waits for things as diverse as mandatory procedures (e.g. security and baggage pickup) and unscheduled problems (e.g. flight delays). Broadly, the problems fell into two categories: stress during mandatory waits whilst under time pressure (e.g. to arrive at a boarding gate in time to catch a flight) and boredom during waits, for example on layovers, without such pressures. Many travelers reported booking flights that minimize layover times, but that this also resulted in increased stress to meet flights whilst waiting to complete mandatory procedures.

**Design of FlyTalk**  
This analysis of user needs formed the basis of an iterative design process that created FlyTalk, a prototype mobile application to support travelers navigating and using airports. Beyond these observed problems and issues, the design of FlyTalk was inspired by social media technologies. This focus reflects the growing importance of social media to travel experiences. Indeed, over 60% of travelers worldwide currently use social media related sites on their trips, typically sharing experiences via services such as

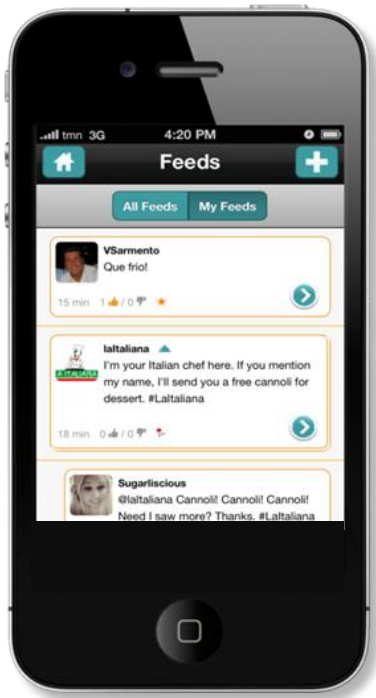


Figure 5: FlyTalk Feeds feature

Twitter and Facebook [11]. Researchers are also exploring more advanced applications, such as the use of crowd-sourced information to aid real-time travel experiences by contributing to and monitoring a network of buses in terms of their location, state (e.g. full or empty) and condition [12].

The design of FlyTalk reflects these trends and presents a solution in which social media is leveraged to meet the needs of air travelers. It achieves this by providing a channel through which travelers can make their voice heard and communicate with airport or airline staff, airport service providers and, most significantly, other travelers. FlyTalk was created by an iterative process which started with paper prototypes and eventually led to a high fidelity prototype of the system implemented using the Sencha Touch Web App Framework on Apple iOS (<http://www.sencha.com/>).

FlyTalk is based fundamentally on *feeds*, or streams of short textual messages as popularized by Twitter. These are illustrated in Figure 5. FlyTalk relies on context in two forms to present this information intelligibly. Firstly, it uses location-sensing technologies, such as WiFi beaconing systems, to determine which airport a user is in, and where precisely a user is located within that airport. Secondly, it requests that users enter their travel itineraries, in order to understand user tasks – where and when users must go to different locations in the airport. This information is used to meaningfully filter the information presented in the feeds according to a range of criteria. Perhaps most importantly, the contextual information regarding location and goals is used to automatically filter content so that only immediately salient information is presented: messages relating to

the airport a user is currently in or the next flight in their itinerary.

FlyTalk feeds encompass messages from official sources, such as announcements regarding flight delays or security procedures. It also presents information from businesses, such as restaurants within the airport advertising discounts. Finally, travelers can also post messages, updates and opinions. The availability of this communication channel is expected to aid in disseminating airport procedures in a timely manner, providing travelers with relevant status information (e.g. long lines at immigration) and curbing many of the frustrations experienced by air travelers. For example, knowing they will receive messages relating to flight boarding status would reduce the stress experienced by passengers stuck in security lines.

Users can also search content on FlyTalk to customize and personalize airport experiences; mining the content posted by previous travelers to find things in the airport suited to their preferences and needs [13]; the best coffee shop, the phone charging stations or the quietest corner. Filters for feeds were also introduced to FlyTalk to tackle specific user needs. For example, under the heading of “Bored” users can post suggestions for activities (e.g. an art display) or browse those posted by others. This is shown in Figure 6 and intended to help users deal with inevitable airports waits.

In summary, the design of FlyTalk mixes location and context awareness with social media and crowd-sourced content to deliver salient, up-to-date information to travelers as they spend time at and move through airports. By providing an archive of such material, it also allows travelers to search a continually

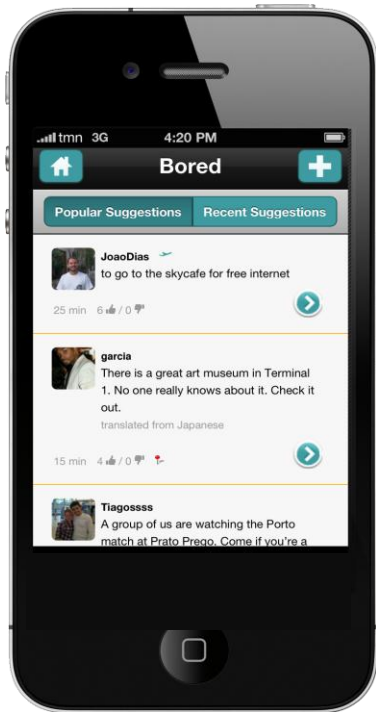


Figure 6: FlyTalk Bored feature

growing knowledge base of user tips, allowing them to optimize and customize their travel experience.

### Conclusion and future work

This paper described user research on 63 travelers across three European airports in order to uncover user needs during travel. Based on the knowledge gathered, it introduced FlyTalk, a prototype Smartphone application that uses social media to better connect travelers. Future work will focus on the development of a fully functional prototype and a field study to determine its value to real air travelers. This work will play particular attention to the suitability of the system to airports of different sizes, such as those studied in the user research described in this paper. In sum, we believe that social media can improve air travel experiences and that the user research and FlyTalk prototype described in this paper ably showcases this potential; future work will study and demonstrate it.

### Acknowledgements

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