Deconstructing Expected Passenger Experience in Airports

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Abstract

The effect of passenger satisfaction on airport profitability has been widely acknowledged in the aviation industry. As a result, there has been much attention directed towards developing a deeper understanding of the factors that influence the passenger experience.

In this paper, we explore passenger experience from a novel perspective - that of the activities expected to be undertaken by passengers while in the airport terminal building. Using the Taxonomy of Passenger Experience (TOPA) as our framework, we look at the pre-travel interview data of 48 participants. The results of our analysis are used to construct an activity-centred account of the expected passenger experience for international departures.

Our exploration of the expected passenger experienced revealed that not all of the TOPA activities have an equal impact on the passengers’ expected experience. The processing, consumptive, preparatory and queuing activity groups featured most prominently in passengers’ accounts of their upcoming airport experiences. Of these, the preparatory category was found to have the most direct impact on passenger satisfaction. Additionally, our analysis indicated that utilising queue time to prepare passengers for upcoming processing activities could have a positive effect on both satisfaction and processing efficiency. A further outcome of this research was the observation that “shopping” did not form a part of the expected experience of any of the interviewed participants.

The outcomes of this study can be used by airports to assist in the management of passengers’ expected experience in the terminal building. As passenger expectations and passenger satisfaction are intrinsically linked, understanding which activities have the most impact on satisfaction provides a basis from which alternate design choices can be evaluated when constructing, or fine-tuning, airport terminal designs.

Keywords
Passenger Experience; Conceptual Model; Taxonomy; Activities; Airport

The aviation industry has undergone a significant number of changes since the inception of commercial air travel in the early 1960’s. In the half century following, the number of passengers travelling by air each year has grown at a staggering pace. According to current predictions, by the year 2016, one out of every two people in the world will be travelling by air (IATA, 2012; U.S. Bureau of the Census, 2012).

The growth in global passenger traffic has been spurred on by several contributing factors. De-regulation in the aviation industry, the emergence of low-cost carriers, the proliferation of the internet and resulting price transparency in the industry have contributed to making air travel accessible to the mass markets (de Neufville & Odoni,
Today, air travel has become a commodity, much like sugar, gold and coffee beans (Pine & Gilmore, 2011). It is generally acknowledged that in today’s economic climate, the provision of commodities is less lucrative than the provision of experiences. As Pine and Gilmore (2011) illustrate, the added value that is perceived by customers as goods are transformed into products, products transformed into services and services into experiences corresponds to increased yields for the business owner. Interestingly, this desired pattern of value progression has been reversed as the commercial air travel industry has matured: what started out as “an air travel experience” in the truest form (offered at a comparably high price point), has been transformed into a commodity with little differentiation and a low price point (Harrison, Popovic, & Kraal, 2013; Rust, 2007). Not surprisingly, the aviation industry has struggled to maintain desirable levels of profitability (IATA, 2013).

One of the approaches taken by the aviation industry to increase profits has been to focus on the passenger experience within the terminal building (de Groof, 2012; Harrison, 2013; Jandiu, 2012; SITA, 2013). In the last year, there has been a consensus on the importance of the passenger experience to the bottom line across all areas of the aviation industry including technology, design, planning, retail, and even the environment (Deillon, 2013). It has now become generally accepted that “customer satisfaction is money in the bank” (Wagnert, 2013). However, although the link between passenger satisfaction and profitability is acknowledged, the factors that influence the passenger experience are only recently becoming explored and understood (Popovic, Kraal, & Kirk, 2010).

In this paper, we look at the role that various TOPA activities (Kirk, Popovic, Kraal, & Livingstone, 2012) play in shaping the expectations of passengers in an airport environment. In particular, we explore the important role that the preparatory activity category plays in managing expectations, and look at how queuing activities can be leveraged to support passenger preparation and increase passenger satisfaction. The results of our research also provide an interesting outcome regarding activities that do not appear to be part of the expected passenger experience.

In the following section, we provide an overview of passenger experience, in particular, the role that expectations play in passenger satisfaction.

**Experience and Satisfaction**

Like all human experience, the passenger experience in the terminal building is subjective and influenced by a number of factors. Time, and interactions with artefacts and the environment, all contribute to a passenger’s ultimate airport experience (Harrison, Popovic, Kraal, & Kleinschmidt, 2012). Like other experiences, the passenger experience is measured through satisfaction, or the subjective interpretation of the difference between expectations and perceptions of a particular event (Harrison et al., 2012; Norman, 2009).

The relationship between passenger expectations (expected experience), passenger perceptions (perceived experience) and passenger satisfaction (satisfaction) is shown in Figure 1. Satisfaction is the difference between a passenger’s expectations (expected experience) and their perceptions (perceived experience) of a given event. The satisfaction a passenger feels with a given event, in turn, affects their own future experiences (past experience) and also the future experience of other passengers (public experience).
The collective influence that one passenger’s satisfaction has on the future experiences of others is extremely strong and is one of the key reasons why passenger experience has gained so much attention in the last few years (de Groof, 2012; Harrison, 2013; Jandiu, 2012; SITA, 2013). This has occurred, in part, due to the amplification that emerging technologies in social media and on-line communication, or “word-of-mouse”, give to the voice of each passenger (Martin & Pranter, 1989; Xia & Bechwati, 2008).

As an example, consider the landmark case of “United Breaks Guitars” (Carroll, 2012). In 2008, a passenger’s guitar was mishandled and broken by an airline. After nine months of negotiations with the airline, the passenger was unsuccessful in getting any compensation, or even an apology for the damages incurred. Feeling dissatisfied with the experience, the passenger recorded a song and posted it on YouTube. The song went “viral”, ultimately costing the airline millions in lost revenue and damage caused to the company’s reputation (via the collective public experience) (Carroll, 2009).

The importance of passenger satisfaction on public experience is even farther reaching when considered in the broader context of travel and tourism (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013). Passengers who have a negative airport experience form both a negative association with the airport in question and potentially influence the travel plans of future travellers. These flow on effects have been demonstrated to have major implications to travel and tourism industry of entire countries (Bharadwaj et al., 2013; London First, 2008; McGrath, 2013; Wince, 2013).

**The role of expected experience**

From the model of passenger experience (Figure 1), we can note that the expected passenger experience plays a key role in determining passenger satisfaction: if we can affect or change the expectations of the passenger, we can affect their ultimate satisfaction. As an example, consider the role that the expected experience has on the satisfaction of two passengers who have an “identical” experience at check-in. The first passenger, having expected to queue for 45 minutes, is pleasantly surprised when he is checked-in in 20 minutes. The second passenger, having expected that check-in would take 5 minutes, is annoyed when the process takes the same 20 minutes.
The work of Norman (2009) provides strategies for how queue time can be leveraged to increase customer satisfaction by using “dead” queue time to manage the customers’ expectations, including:

1. Managing expectations through information transparency, for example, communicating reasons for a flight delay has been shown to help passengers understand the source of the problem and adjust their expectations accordingly.

2. Managing the “ending” of an experience, as the ending is often the most remembered part of the overall experience and outlives the duration of the event itself.

In the context of the passenger terminal building, in particular the departures section, the “ending” of the passenger experience is the successful boarding of the desired flight. The uncertainty involved in the departures journey that a passenger feels is intimately connected to this main goal of making the flight (Harrison et al., 2013). In other words, if the passenger makes the flight, they are ultimately satisfied. As such, there is not much scope for differentiation, or the provision of a superior or “fantastic” ending to the passenger’s in-terminal experience.

By comparison, there is scope for managing the expectations, and thus increasing satisfaction, through focussing on the passenger’s total time in the airport building. In the remainder of this paper, we look at ways of doing this from the perspective of the activities undertaken by the passenger during their departures journey. We begin by introducing the Taxonomy of Passenger Activities, or TOPA, which will be used as the framework for our analysis.

**Passenger Activities**

The activities that a passenger undertakes in the airport environment provide an objective framework for the evaluation of the passenger experience (Kirk et al., 2012). In the context of international departures, these activities can be broadly classified into necessary activities (those that must be completed), and discretionary activities (those that can, but do not have to be, completed) (Popovic, Kraal, & Kirk, 2009).

![Figure 2: The sequence of activity types for Australian international departures](image)

The international departures sequence of discretionary and necessary activities for Australian airports is shown in Figure 2. As an example, a passenger arrives at the airport, possibly has a coffee or exchanges currency (discretionary), proceeds to check-in (necessary), buys a newspaper (discretionary), proceeds to security and customs (necessary), fills some time reading the paper at the gate (discretionary) and then boards his or her flight.
Looking at Figure 2, it would appear that the necessary activities dominate the passenger’s in-terminal experience. In practice, however, they only account for 36% of the passenger’s total time in the airport terminal. The remaining 64% of the passenger’s time is spent in discretionary periods (Kirk et al., 2012; Underhill, 2008). Although the discretionary periods constitute the major portion of the passenger’s total airport experience, they are traditionally least considered in the literature (Airport Council International, 2008; Graham, 2003; Minton, 2008).

The work conducted by Kirk (2013) considers both the discretionary and necessary periods of a passenger’s time in the airport terminal and breaks these down into a comprehensive taxonomy of passenger activities (TOPA). The TOPA framework classifies passenger activities into eight key groups: processing, consumptive, preparatory, queuing, entertainment, social, passive and moving (Kirk et al., 2012). Each key group is further broken down into sub-activities. For example, the preparatory category of activities consist of ten sub-activities, including interacting with staff and filling out an Outgoing Passenger Card (OPC) (Figure 3).

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![Figure 3: Taxonomy of Passenger Activities (TOPA), highlighting the Preparatory sub-category](image)

The Taxonomy of Passenger Activities shown in Figure 3 will be used as the framework for the analysis of passengers’ expected experience in this paper.

**Research Method**

In order to gain insights into the activities that influence the passengers’ expected experience, we conducted pre-travel interviews with 48 participants. All participants were passengers undertaking international travel between April 2010 and February 2011. Participants were recruited through several channels, including advertisements placed in city centre retail outlets and around university campuses. Participants planning to use an airline lounge during their stay in the airport were excluded from the research. This is due to the fact that airline lounge customers have a removed, “atypical” experience in the airport environment, and as such, are not necessarily representative of the average traveller, or the average airport experience (Shaw, 2007).
The participant interviews were conducted 1-2 weeks before the intended date of travel. Interviews were conducted in person and/or through Skype (2013). The interviews were structured very loosely, in order to minimise the amount of bias or pre-conditioning on the part of the interviewer (Opdenakker, 2006; Seidman, 2006). As such, only one question was asked of the participants initially, namely:

“What do you expect during your [upcoming] airport experience?”

Appropriate follow up questions were then asked to elicit more information or an elaboration from the participant. For example, if a participant mentioned that they would visit a shop before going to check-in, they would be asked what they planned to do in the shop. If a passenger said they planned to check-in as soon as they got to the airport, they were prompted to elaborate on what they thought would happen at check-in.

Importantly, at no point during the interview was the participant prompted on what to discuss, or reminded about elements of their experience they may have overlooked. This was critical in formulating an accurate model of the expected passenger experience. For example, if a passenger mentioned they would go to check-in and subsequently go to their boarding gate, they were not reminded of the security and customs phases that they had forgotten about (but would of course necessarily have to complete).

The interviews were audio recorded, transcribed and imported into Atlas (ATLAS.ti, 2011). The interview transcripts were analysed using the coding scheme shown in Table 1.

<table>
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<th>Coding Scheme Used</th>
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Table 1: Coding scheme applied to the interview data

Data was also generated to extract relationships between TOPA groups. For example, if a passenger mentioned that they would eat their breakfast while waiting in the check-in queue, this would produce a co-occurrence relationship between consumptive and queuing activities. This data was used to extract themes related to the relationships between various TOPA activity groups.

**Participant Demographics**

The participant group selected for this research was reflective of the general travelling public in Australia (Australian Bureau of Statistics, 2012). There was an even distribution of male and female participants, who displayed a range of travel experience. The business to holiday distribution for participants corresponded to the average for Australia (15% business, 85% holiday). The participants were all able bodied, and ranged in age from 18 to 70. Airline lounge users were excluded from this research. In general terms, the demographics were not found to play an influencing role in the results of this research. This was due to the fact that all participants were able bodied, and also due to activities being a neutral framework for the investigation of passenger experience (Kirk et al., 2012).
Results

The analysis of the data set revealed that the passenger activities identified in the TOPA classification did not play an equal role in their role in passengers’ expected experience. In fact, of the eight TOPA high-level categories, only four were mentioned by more than 50% of the interviewed participants (Figure 4). This suggests that activities associated with processing, consumptive, preparatory and queuing TOPA classifications are most important in their role of shaping the passengers’ expected experience (Figure 4).

![Figure 4: An activity-centred view of expected passenger experience](image)

Processing Activities

On the basis of the data analysed, it was clear that the majority of passengers were well informed about the processing steps that they needed to undertake in the journey through international departures (Figure 4). In the context of the TOPA activity classification, this equated to all passengers displaying awareness of the processing activity group. Examining the sub-activities of the processing activity group, all passengers were aware of check-in and boarding activities, and most talked of security (75%) and customs (63%) related activities (Figure 5).

References to processing activities dominated the passengers’ accounts of their expected experience at the airport. Thus, although these activities only account for 36% of the total airport time, they have a strong influence on the passengers’ expected experience.
Consumptive Activity Group

The consumptive activity group was discussed by 96% of all participants (Figure 4). Respondents generally discussed consumptive activities with reference to “grabbing a coffee” or “browsing for a book to read”. Correspondingly, the consumptive activities formed a significant component of the expectations that passengers had of their airport experience.

Surprisingly, however, with the exception of references to food or dining, there was a very weak relationship between discussion of performing a consumptive activity, such as retail browsing, and the intention to purchase something. Of the participants interviewed, only 15% indicated that they planned to browse through the retail area – of these, none reported an intention to purchase anything. In fact, it appeared that passengers planned to use the retail area predominantly to fill time, or entertain themselves while waiting for their plane to depart.

The data indicates that although there is a strong relationship between the consumptive group of activities and passenger expectations, this relationship is based on the presumption that the passenger will encounter “dead-time” which they need to fill while in the terminal building. Thus, although not seen as such, consumptive activities, in the context of what passengers expect from their airport experience, are seen as an answer to boredom – the intent to “go shopping”, or purchase things, did not appear to form a part of the passengers’ expected experience.

Preparatory Activity Group

The preparatory group of activities were a third major class of activities that passengers reported when speaking of their expected airport experience. Of the participants interviewed, 94% mentioned preparatory activities (Figure 4). Participants spoke of preparatory activities in the context of necessary activities and also in the context of planning food related purchases during their discretionary time. In general, there was a strong relationship between preparatory activities and the passengers’ expected experience.

In the context of necessary activities, the most common reference was in relation to completing the outgoing passenger card (OPC). Of the participants interviewed, 31% mentioned an intention to fill out their OPC before getting to the security/customs area.
This of course indicates that the remaining 69% of passengers were potentially unaware of the requirement to complete the OPC.

In relation to pre-planning purchases, 70% of participants planned in advance what they intended to purchase. From the data collected, all references to intended purchases involved planned food expenditures, expressed usually as the intent to “grab a coffee”. Although none of the participants interviewed expressed an explicit intent to purchase items in the retail area, the findings of Livingstone (2013) suggest that most passengers plan in advance what they will purchase, and very few purchases in airport retail locations are made on impulse.

A further theme that emerged from the analysis of the preparatory activity group and passenger expectations was a correlation between preparatory activities and feelings of control. There was a 100% correlation between passengers who talked of preparation and those that spoke of their expected experience in positive terms. This finding is supported by the results of Harrison et al. (2013), who found that passengers used prior knowledge and familiarity to control their (in-terminal) airport experience.

**Queuing Activity Group**

The queuing activity group was a component of the expected experience for 58% of all participants. Not surprisingly, passengers spoke of “queuing” with reference to one of the four processing activities: check-in, security, customs and boarding. In contrast, passengers spoke of “waiting” in relation to activities associated with their discretionary time, for example “waiting to get a coffee”.

The queuing activity group was found to have a strong connection to the expectations that passengers had of their experience from a time-oriented perspective. As an example, passengers spoke of anticipating getting through check-in and security in a certain time frame, depending on “queue length”. In addition to setting up the baseline for their expectations, the queuing activity group appeared to be used by passengers as an indicator of how “busy” the airport was at a point in time.

In a related study from Harrison et al. (2013), it was reported that queue length was used by passengers to dynamically adjust their expectations. As an example, all passengers have certain expectations about how long the check-in process will take. Upon arriving at the airport however, and visually assessing the queue length, passengers were observed to adjust their expectations to reflect the queue length on their particular day of travel. This dynamic adjustment of expectations to reflect queue length can be thought of as a special case of “information transparency” as described by Norman (2009).

**Other Activity Groups**

The four remaining activity groups individually contributed to the expected experience of less than half of the interviewed participants. As shown in Figure 4, 46% of passengers mentioned entertainment activities, 46% mentioned social activities, 29% talked of passive activities and 23% included moving activities as part of their expected airport experience. All of these activity groups were mentioned in the context of the passenger’s expectations in relation to their discretionary time at the airport.

Passengers spoke predominantly of entertainment in the context of how they plan to “fill time” at the airport. This involved various references to the passenger planning to entertain themselves with their own technology devices, for example, an intention to go to the gate and listen to music on their iPod, or watch a movie on their tablet computer.
The remaining activities (social, passive and moving) were spoken of loosely in various contexts. There were no identifiable themes that emerged from our analysis of the interview transcripts with respect to these three activity categories.

**Discussion**

The results presented in the previous section indicate that the expected experience of passengers is dominated by references to processing, consumptive, preparatory and queuing activities. In particular, these four activity types provide tangible focus points that can be leveraged by airport operators in making design decisions.

In this section, we present three ways in which these deeper insights into the expected passenger experience can be used to positively affect passenger satisfaction in the terminal building.

**Prepare the passenger**

Conceptually, preparatory activities moderate the passenger’s expected experience (Figure 6). From a design perspective, this activity class provides a direct conduit to passenger satisfaction – if the passenger expectations are managed correctly, the result will be positive satisfaction, regardless of the actual experience that was delivered in the terminal building (Harrison et al., 2012). Incorrect and partially formed expectations can be adjusted by preparing the passenger more appropriately for their upcoming passenger experience. From a design perspective, this activity class provides a tangible focus when considering changes that will impact the passenger experience.

As an example, our results showed that some passengers did not have an accurate perspective of the necessary processing steps: 25% of passengers did not mention going through security, and 37% of passengers did not mention clearing customs. For these passengers, the (omitted) activities are not a conscious part of their expected airport experience. Naturally, as these passengers are unaware, they will not explicitly prepare for these omitted activities. For instance, in order to pre-pack liquids and gels into a zip-lock bag in carry-on luggage, a passenger must be aware, or have an expectation, of what is required during the security screening phase. A lack of awareness will slow down the security process, as passengers will need to complete the activity in the security queue. This of course will affect passenger satisfaction negatively, both through a deviation from expectations, and possibly through delays and unforeseen interaction with security staff.
Preparatory activities provide a relatively easy target for airport operators to focus on to improve passenger satisfaction. Due to the increase in digital communications, both personal such as email, and public social media channels, airports have a direct channel via which to manage passenger expectations through awareness and preparation. As a most simple example, an email outlining the four processing steps can be sent to a passenger on the day before their intended travel. This would remind passengers of aspects of the upcoming experience they may have forgotten about or overlooked.

Preparatory activities can also be leveraged to adjust passenger expectations while in the terminal building. Earlier processing steps can be used to prepare passengers for what is expected downstream: for example, passengers can be reminded to fill out their Outgoing Passenger Card (OPC) by the check-in agent. This strategy is informally used by some airports, for example, at one of our workshops, and airline executive stated that "...it is good to have the research to back up what we sometimes do intuitively..." (Krause, 2012). Understanding the role that preparatory activities have in shaping the passenger experience can be utilised to provide more formal guidelines for airport staff.

Of course, using staff to prepare passengers in the terminal building is not a sustainable long-term strategy in light of the general trend towards increasing automation in airports (Copart, 2013; SITA, 2012). As staff members are replaced by self-service check-in counters and self-service bag drops, the opportunity for preparing the passenger for activities downstream is lost. Understanding this, it is natural to start considering strategies to incorporate this aspect of passenger preparation into the design of self-service artefacts.

**Alleviate the boredom**

The passenger interviews revealed an interesting disconnect between the way that passengers view their expected airport experience, and the way that airports think passengers view their expected airport experience (de Groof, 2012; Griffith-Jones, 2012; Nunes Madeira, 2012). From an airport perspective, there is a general belief that passengers wish to engage with, and have a "retail experience" in the airport. To this end, a considerable amount of resources are currently being channelled into expanding retail facilities, under the possibly flawed assumption that passengers are looking for various "shopping experiences" while in the terminal building.

When speaking of consumptive activities, the interviewed participants spoke of intent to engage in food-related activities, such as "having a coffee" or to "filling time". Shopping, as a retail activity marked by the intent to purchase something, was not directly referenced by any of the interviewees. With the exception of food and beverage, other retail areas are considered by passengers as an opportunity to alleviate boredom rather than make purchases.

This result indicates that airport retail should be focussed towards providing passengers with food and beverage options, and/or opportunities to alleviate boredom rather than "buy things". Alternatively, airports could focus resources towards changing passenger expectations with a goal of making shopping part of the expected passenger experience.

**Don’t focus on queue time**

The impact of queuing activities on passenger satisfaction was found to be multi-dimensional. For the majority of passengers, "queuing and waiting" was a core part of passengers’ expectations. Accordingly, the presence of queues does not necessarily result in a negative passenger experience. This observation is supported by the work of Kirk et al. (2012), who found that queue length only has a negative impact on the
passenger experience in cases where the wait is longer than 30 minutes: i.e. the wait is longer than expected. Queue length was found to have a positive impact on the passenger experience only in cases where the wait was zero minutes: i.e. the wait was shorter than expected.

In most cases, it is impractical for airports to target the provision of services with zero queue length. It follows therefore that queue length alone will not have a positive impact on passenger satisfaction. However, utilising the insights from the work of Norman (2009), we can project that using passenger queue time to prepare the passenger for the next activity will lead to a reduction in the passenger’s perceived queue time. Reducing the perceived duration affects the passenger’s perceived experience and increases the corresponding satisfaction.

**Conclusion and Future Work**

As the link between profitability and experience becomes well established in the aviation industry, more energy is being directed towards investigating the nature of the passenger experience. In this paper, we extended the understanding of passenger experience by exploring the factors that influence passenger satisfaction from a novel perspective: that of the activities expected to be undertaken by passengers while in the airport terminal building.

Using the Taxonomy of Passenger Experience (TOPA) as the framework for our analysis, we examined the pre-travel interviews from 48 passengers. The results indicated that processing, consumptive, preparatory and queuing activities had the most important role in shaping passengers’ expected experience. By deconstructing the passengers’ expected experience into these activities, we provide tangible insights that can be utilised by airports when evaluating design decisions that affect passenger experience.

Firstly, our results indicate that passenger preparation has a direct effect on passenger satisfaction. Understanding this, strategies can be developed which enhance passenger preparation both prior to travel, and on the day of travel. We also highlight the need to make passenger preparation an explicit element in the design of future self-service technologies.

A further result that emerged from this research was the nature of the relationship between consumptive activities and passenger expectations. With the exception of food and beverage related activities, passengers did not consider “shopping” as part of their expected experience. This observation could have an important impact on the way that airports approach the development of retail areas. Based on our findings, a strategy of providing eating and entertainment-focussed experiences could have a higher impact on passenger satisfaction than the provision of “shopping” experiences.

As part of ongoing future work, the implementation of the outcomes of this research in operational airport environments is being pursued. Early results suggest noticeable improvements in passenger throughput as a result of passenger preparation in both check-in and security queues (Kirk et al., 2012). The development of a tool for use by airport designers based on the TOPA framework is also being investigated.

**Acknowledgements**

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References


IATA. (2013). Small boost to airline profitability - Industry profit margin improves to 1.6% http://www.iata.org/pressroom/pr/Pages/2013-03-20-01.aspx


Krause, D (2012). [A conversation with Dennis Krause, BNE Airport].
Livingstone, A. (2013). *Passenger experience in an airport retail environment*. (PhD), Queensland University of Technology (QUT), Brisbane, Australia.


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Philip Kirk completed his PhD in Airport Design at Queensland University of Technology, Brisbane, Australia. Phillip’s research explored the experience of passengers at airports, understanding and modeling the various activities passengers undertake. A new perspective on how to understand passenger experience at airports developed, called the Taxonomy of Passenger Activities (TOPA). TOPA has been applied to some airport services and significant improvements in the design and operation occurred. Phillip was a
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