

The Ergonomist

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Passenger insights for design

Andy Baker

Andy Baker is a Director of Davis Associates Ltd.

Davis Associates is an ergonomics consultancy which has successfully been in business for 25 years. "To mark this anniversary we have revised and re-launched the company's identity. This has included a new way to describe what we do as ergonomists for our clients. We have all watched the growth of inclusive design, usability and user experience design as distinct disciplines. We know that the principles and techniques used in these fields are rooted in the user-centred approach that is the basis of ergonomics. What we needed at Davis Associates was a way to bring all those approaches together into one distinct term that is relevant and clearly understood in all contexts: User insights for design. Here are three examples of how, as ergonomists, we have used user research techniques to deliver insights to the design process."

Understanding the passenger's experience in any travel situation is a fascinating and challenging proposition. You need to get as close as possible to the process in order to understand passengers' true needs and behaviour-influencing factors. The following three case studies uncover user insights for transport design.

The Heathrow pod

One of the key challenges in the design of large, multi-terminal airports is transferring passengers and staff between terminals, and between terminals and car parks. When the distance involved is further than walking distance, this transfer process is usually carried out by bus, but a new system has been installed for London Heathrow's Terminal 5: a personal rapid transit (PRT) system known as the Heathrow pod.

Several years in design, this is a unique system. You sit up to four to a pod, like a car, but there's no driver – it follows an automated guideway. You summon a pod like a lift in a building, but unlike a lift you specify your destination before you get in. There will be no staff present so it needs to be intuitive and inclusive for all potential users.

Davis Associates has been part of the design team and Passenger Experience Working Group from the early days of the development process. Our remit has covered more than just the ergonomics of the vehicles and stations: we have helped BAA create an exciting and efficient passenger experience.

At the start, our user insights research around Heathrow helped to define a wide diversity of passengers' functional and emotional

needs and these were embodied into a series of personas or stereotypical passengers. The personas, together with specific operational and ergonomics requirements, helped shape the PRT business proposition and the design brief.

As the design progressed, we conducted a series of user trials, with increasing fidelity, to assess every element of the passenger experience. We created screen-based simulations, known as rapid experience prototypes, in order to show passengers how the pod process would work from end-to-end and elicit feedback on key wayfinding decisions. Station mock-up trials assessed passengers' likely queuing behaviour and responses to information cues from the system. Studies also assessed inclusive design issues for those with sensory and mobility impairments. Finally, in the last few months prior to opening we have used the complete, working system to conduct final validation trials with Heathrow passengers, assessing real reactions to the system and how any unexpected delays can be dealt with by the control room staff.

The findings of this iterative research process have been very comprehensive. Davis Associates has contributed to the design of stations, vehicles, service design and the control room systems. Every touchpoint has been carefully considered to provide a stress-free user experience, including clear wayfinding information, easy to use touchscreens, accessible vehicles and responsive assistance if required. The system is due to go into service during 2011.

British Airways First Suite

In 2010, British Airways re-launched their flagship long haul offer, the First Suite. Developed by design consultancies Tangerine and ForPeople, together with aircraft seat manufacturer B/E Aerospace, the product sets new standards in the premium travel market. It has already won plaudits such as the Special Award for Industrial Design in the 2011 Design Week Awards.

Proper consideration of ergonomics is essential for good seat design in any context, especially so for long haul flying. However, in this market, the brief goes beyond simply





'ergonomics good practice'. The product has to deliver the optimum comfort, seamless usability and premium experience expected by passengers in First. To help deliver this experience, BA brought us onto their team to address various elements of the design critical to success of the product.

Mock-up trials were used to assess passenger movement and access to storage in and around the seat space. This included factors such as: optimisation of the general arrangement so that the passenger can be joined by a guest for meals, addressing table adjustment; the dimensions and space for a second seat; and entry to, and egress from, the space envelope.

Another element concerned the screen size, position and adjustment for the in-flight entertainment (IFE) system. IFE is a core part of the passenger experience and the airline industry has seen a recent trend of installing larger and larger screens in Business/First seats. However, in our opinion this has not always been aligned with a comfortable viewing distance to match the screen size. For the BA First programme we conducted extensive user trials using representative IFE content and on-demand menu structure shown at the correct size and resolution, to assess screen position and adjustment. As well as the IFE design, this also informed the design of the surrounding seat structure.

Finally, at the prototype stage, we designed and delivered passenger experience trials, with representative participants who are accustomed to travelling in First. The trials enabled BA to see, before full production started, how passengers will react to the experience of using the seat's touch-points and controls. We also provided BA with valuable insights into the areas of the seat that will see a lot of wear and tear in use, and therefore may become damaged in service.

Wayfinding at stations

Wayfinding and signage information across UK rail stations is inconsistent and confusing for passengers. Train operating companies apply their own unique branding and signage design to the stations under their control.

Due to the current system of franchise agreements, these graphic identities may only be in place for a few years before the next train operator updates them. Compounding these variations in graphic design, there is also no standard for wayfinding information strategy, location or terminology, other than for emergency information.

Network Rail, as the infrastructure owner, does have its own wayfinding standard for the largest stations on the rail system, but this is not consistently applied, even within a single location. For example, at St Pancras, one of the most complex major stations to navigate through, there are several different systems of signage design in place, introduced by the various companies that operate trains from the station.

We know from our research with passengers that poor wayfinding directly contributes to a poor journey experience. Concerns over getting lost in unfamiliar stations are magnified by the fear of missing a train. For those passengers with sensory or mobility impairments, just getting through the station to the train can be a significant challenge.

The UK rail industry, through the Rail Safety and Standards Board, commissioned Davis Associates to investigate the needs of station users from wayfinding, in order to define consistent principles for station signage. We used a variety of research techniques to empathise with passengers' behaviour-influencing factors and discover their mental 'map' of the station. These techniques included the use of journey shadowing in order to understand the information sought by passengers at walking route decision points around the station.

Understanding the passengers' information needs is a key input to a comprehensive wayfinding strategy, in which each piece of information is set in context, when and where it is needed. As a result, passengers experience a more efficient and successful wayfinding process, thus improving their journey experience. There are also benefits for station operators; good wayfinding reduces passenger reliance on staff to give or confirm directions. It also reduces the need to re-work or supplement signage systems, when the original design has been poorly considered.

The outcome of the project was a comprehensive Good Practice Guide, which has been distributed to thousands of stakeholders in the rail industry. ❖



For more details about Davis Associates, visit their newly launched website at www.davis-associates.co.uk.