Inclusive Information Environments in Public Transport

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Research challenge

The distribution of passenger flows in public transport environments can be predicted through simulations of flow characteristics. The flow characteristics are usually based on average values, they assume, that all users know the infrastructure and use the shortest route to reach their goal. They do not include behavioural characteristics of people with mobility impairments such as wheelchair users, individuals with prams and small children, older people or people with sensory impairments.

The overall research project was aimed at

1) improving the quality of such pedestrian flow simulations by incorporating information about group-specific orientation and navigation behaviour and

2) linking the simulation to the information environment.

Within this project qualitative design research was formulated to elaborate on information design content.

Use cases were based on the *Praterstern* transport interchange with high density commuter travel as well as being a tourist and weekend attraction.

The main question for information design was to identify a relationship between the information environment and orientation strategies of these groups of passengers. Results may point towards group-specific information requirements beyond the obvious and known physical requirements.

Methods used

- Pre- and post-task interviews with all respondents from eight categories: 70+ years old, adult with push-chair, mobility impaired, wheelchair users, visually impaired, blind, hearing impaired, deaf.
- Definition of two realistic scenarios: within one transport system and changing between two different transport systems (one scenario per respondent).
- Telling a story to make the tasks plausible, i.e. visiting a friend and buying some flowers on the way.
- Documentation of the tasks employing three different techniques: "Thinking aloud" comments recorded from the respondent; "Shadowing" of each respondent; time/motion tracking on a tablet-PC with annotations of defined events.

Results

The insights gained were in some respects surprising but also confirmed our conviction that context and a holistic view of the information environment are paramount to successful information design.

1. The quantitative measure revealed an overall slightly slower walking speed (0,84 m/Second) for the groups we looked at compared to what is usually assumed in pedestrian flow simulations (1,34 m/Second).
2. It was surprising, however, that across the groups we found no significant difference in the speed of completing the tasks.

3. By matching the thinking aloud data with walking speed and observations a pattern of "moving with confidence" and "insecure movement" emerged. Thus a complete narrative for each task was created, incorporating the personal profile of the respondents, their movement pattern, speed, comments and observations.

4. People's expectations and experience determine what they are looking for in the (information) environment. This was demonstrated in two ways: when on-screen information was available but not expected, it was "invisible"; when buses and trams were arranged in a parallel platform style people were confused and had trouble finding the bus stop located behind the tram. (In both cases Vienna city transport adopted new strategies that were usually associated with the railways but unfamiliar in a city transport context.)

5. High concentration of the most used features in the environment on one side of the concourse (access to lifts and escalators, info screens, supermarket, cash point, take-away), caused conflicts between "gathering information mode" and "moving along mode".

Conclusions

Regardless of physical ability respondents across all groups had similar problems when navigating the environment: placement and recognition of functional features/information; readabiltiy/audibility of information; clarity of content.

Leaving us with the observation that the design and organisation of the environment and of information seem to have greater influence on navigation and orientation behaviour than age, gender or any physical requirement.