Rail Station Passenger Congestion – the Good, the Bad and the Ugly

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People

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Space

Space
Too many People

Too little Space
(1) Shrink the passengers
(2) Increase the space.
Vienna Hauptbahnhof
U-4 Budapest
(1) Shrink passengers
Reduce the time passengers spend in stations during crowded periods.
Think outside the box
Think outside the box
Trip Planning

Allow passengers to choose trains based on:

• Expected demand
• Peak pricing

SBB Travel Planner – www.sbb.ch
On-line Ticketing

• Reduce time passengers spend in stations.

• Reduce space needed for selling tickets.

www.site-project.eu
Information Apps

- Enable passengers to arrive “just in time” for their trains.
- Can you encourage passengers to wait at Starbucks?

Qando application - Vienna
Questions

- Common info apps?
- Common ticketing apps?
- Apps + real incentives?
- Station wifi (roaming)?

SBB mobile app – also shows expected crowding.
Games

Influence behaviour

... shift passengers to less crowded stations?

... link to exercise apps?

Chromaroma (London)
http://wearemudlark.com/projects/chromaroma/
Schedule

• Does your schedule encourage passengers to wait in stations?

• Direct trains or transfers?
Control

Can you meter the number of passengers using your station?

Wiener Linien
U2 Station Stadion
Austrian Institute of Technology
(2) Increase space
(2) Increase space
Analysis

TRB: Transit Capacity and Quality of Service Manual
Part 7 – Stop, Station, and Terminal Capacity
Subway Entrance Hall Model
Anylogic® Pedestrian Library Example

This sample model represents possible passenger flows in entrance hall of the simulated subway station.

Multiple passengers go through the ticket control to or from the subway. When going to subway part of them buy tickets at manual ticket offices or automatic ticket selling machines.

The subway station hall is equipped with
- automated ticket selling machines
- ticket offices
- automated ticket control (pay-passes)

Visitors choose their way to their targets in "free" space, without strict guidelines, walking around obstacles.

Simulation time: 425.1 sec.
Total number of passengers: 138

Pedestrian Simulation Programs (example)
Effective space

- Eliminate bottlenecks
- Optimize furniture
- Remove unnecessary items

SBB Bern Hauptbahnhof
Platform screens increase effective space.

London Bridge station (photo: Chris Sampson, on Flickr)
Channelling pedestrians (good? Bad?).

Budapest Metro transfer corridor
Escalators move passengers off platforms.

Zurich HB Lowenstrasse Station – three are better than two!
Better escalators:
• walk right
• maintenance
• ramps

Zurich, Vienna, Vitoria-Gasteiz
Extra exits encourage passengers to spread out on the platform.

Bern Hauptbahnhof: new exit built as part of Bahn2000 program.
Trade-offs: cost vs. opportunity
Trade-off: Spending money in stations can ...
... save money on the network.

SMA+ Partner: impact of increased station dwell time on Taktfahrplan.
Trade-off: Through stations reduce passenger congestion and significantly improve service.

Malmo Sweden: Citytunneln Project
Trade-off: stations as shopping centres: revenue versus more congestion?

Leipzig Hauptbahnhof (photo: pilot_mucha flickr)
ETWAS UNPRAKTISCHES KANN NIE SCHÖN SEIN.

WHAT IS IMPractical CAN NEVER BE BEAUTIFUL.

OTTO WAGNER
Andrew Nash helps clients design and manage innovative public transport, railway, urban planning and active transport projects. Current work includes greencitystreets.com (using information technology for better public participation), open source railway dispatching applications, public transport planning and active transport projects. See andynash.com for details and contact information.