Efficient urban transport and public transport systems

Optimized door-to-door transport chains

Dominik Brühwiler, Zürich Transport Authority,
Kilometer per Person and Year (Railways)

- Schweiz: 2291
- Frankreich: 1370
- Dänemark: 1329
- Österreich: 1245
- Belgien: 1009
- Deutschland: 933
- Niederlande: 922
- Vereinigtes Königreich: 842

- Bulgarien: 298
- Rumänien: 269
- Estland: 209
- Griechenland: 132
- Litauen: 97
- Lettland: 34
Trips per Person and Year in Europe

- Schweiz: 49.3
- Dänemark: 35.4
- Luxemburg: 34.6
- Österreich: 25.6
- Deutschland: 23.2
- Belgien: 21.2
- Vereinigtes Königreich: 20.3
- Niederlande: 19.9
- Frankreich: 17.8
- Schweden: 4.0
- Rumänien: 3.0
- Griechenland: 1.4
- Litauen: 1.2
- Lettland: 0.1

Source: Railway Statistics Europe 2011
why choose swiss people public transport?
most relevant factors

- easy access ➔ memorizeable timetable / ticket buying
- competitive total journey time ➔ compared to private cars
- high frequency of services ➔ whole transport chain
- reliability ➔ punctual services and guaranteed connections

- security / comfort / cost of trip / others

➔ network/timetable and network access/ticket/information
network access: smart phones become increasingly important

[Graph showing monthly sales of m-tickets increasing over time]
trip planning starts at home.

pre-trip
Planning
Departure Station
Vehicle
Destination

on-trip

21.06.2012
PEP Workshop Moscow June 2012
real time departure screens
shopping mall, hotel lobby, reception desks, sport & cultural events
easy access: the ticket system

- +/- integrated ticket system nationwide
- 100% integrated regional ticket systems
- 100% open system: no reservations, no supplements, no access gates, no time restrictions
- 40% of population over 16 years own halfprice card
- 7% own general public transport card
Public Transport Network Switzerland

- Local traffic (tram, trolleybus, bus; towns over 20,000 inhabitants with extra local traffic)

≈ 100km
better connections, memorizable timetable ➔ fixed interval families

<table>
<thead>
<tr>
<th>Service Type</th>
<th>120</th>
<th>60</th>
<th>30</th>
<th>15</th>
<th>7.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>International (expt MUC)</td>
<td>●</td>
<td>(●)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inter City</td>
<td>(●)</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional / S-Bahn</td>
<td>(●)</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Bus</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local Bus / Tramway</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Possible hub times</td>
<td>00</td>
<td>00</td>
<td>00/30 or 00/15/45</td>
<td>00/15/30/45</td>
<td>no hub</td>
</tr>
</tbody>
</table>

**reliability: average arriving delay**

- **Swiss federal railways**: ≈ 70 sec. operational stability “guaranteed” until 180 sec.
- **JR east**: 7 sec..., trenitalia...
main national public transport hubs in Switzerland

- regular interval timetable (1982)
- fixed hub timings
- frequent services, often low load factor but effective operation
- interval families (60min – 30min – 15min - 7.5min)
Zurich public transport network
regional hubs 00/30 - 15/45
95 Departures per Hour in an empty Station?

Zürich Main Station:
>400‘000 passengers per working day
>1200 departures / day
Cost Effectiveness of Public Transport

public expenditure per pkm/tkm [CHF/100]
Political and Public Acceptance

- all public referendums since 1982 on railway and tramway projects were accepted (Zürich area)
  - all new roads were rejected (Zürich area)
- all political parties generally support public transport
- higher incomes ➔ better modal-split

21.06.2012 PEP Workshop Moscow June 2012
Thank you for your Attention