

# Touch&Travel – NFC based automatic fare collection using a passive infrastructure

NFC Forum: Transport and City Life focus group



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DB Mobility Logistics AG

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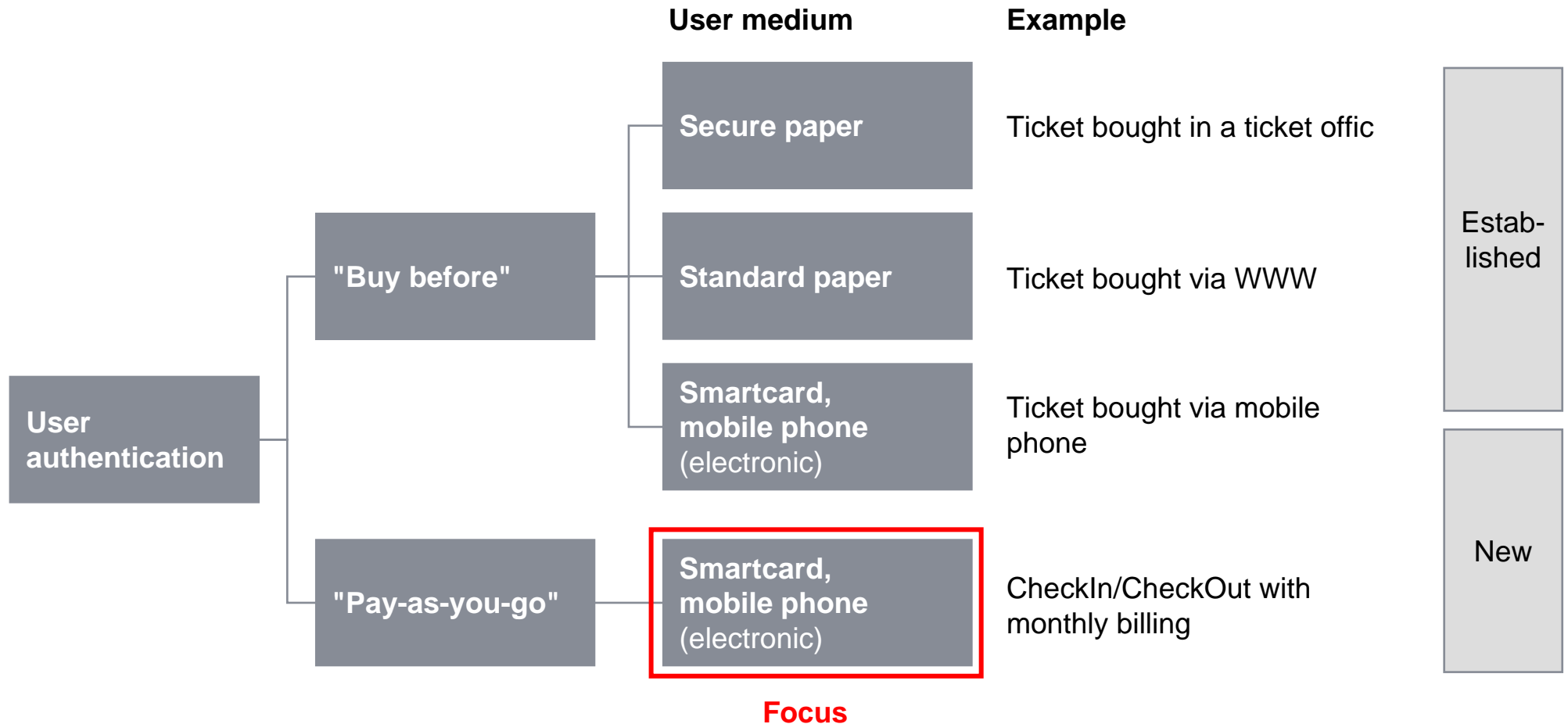
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Frankfurt, 10/06/2008

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- 1 Deutsche Bahn's general eTicketing position**
- 2 Touch&Travel: Automatic fare collection via mobile phones**

# The existing ticketing portfolio will be expanded during the next years




# eTicketing has to fulfil fundamental requirements – low infrastructure costs speak in favor of mobile phones


## Premises

- **High user acceptance**
- **Easy use**
- **Cost-effectiveness**
- **Mass capability**
- **Broad applicability** (long and short distance traffic and additional services)
- **One standard** in Germany / compatibility in Europe
- **Safety**



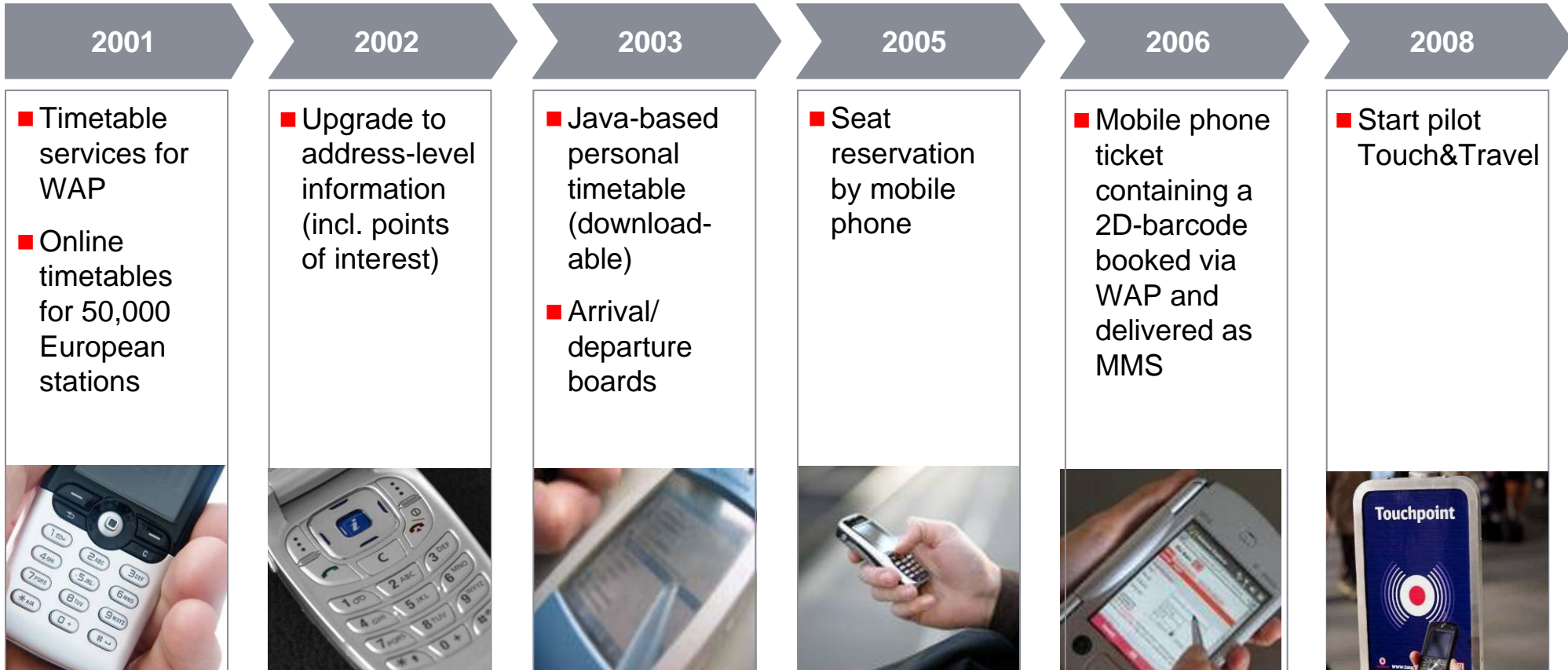
- Mobile phones could meet the requirements in principle 
- High comfort by using multi-functional devices
- Technologies have to be developed and tested

contactless smartcard

- Mature technology
- Internationally successful approaches can not be transferred to Germany<sup>\*)</sup>
- High costs for infrastructure make systems inefficient 

<sup>\*)</sup> Those approaches are usually implemented in urban areas and within gating structures – Germany in contrast to that is a very heterogeneous country with open passenger traffic systems

# Deutsche Bahn's mobile services are constantly being further developed



# Agenda

- 1 **Deutsche Bahn's general eTicketing position**
- 2 **Touch&Travel: Automatic fare collection via mobile phones**

# Touch&Travel - the modern way of travelling



## Touch&Travel

- Simple and flexible access to public transport using mobile phones
- No ticket purchase, no tariff knowledge required
- Low infrastructure costs in comparison to smartcard systems, because data is transferred via mobile networks



# ...and travel

3

## Ticket inspection



- Check In status can be inspected

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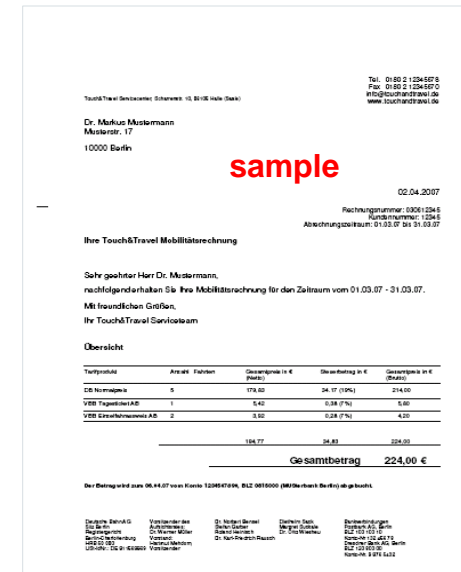
## Touch Out



- Touch Out at the end of the journey

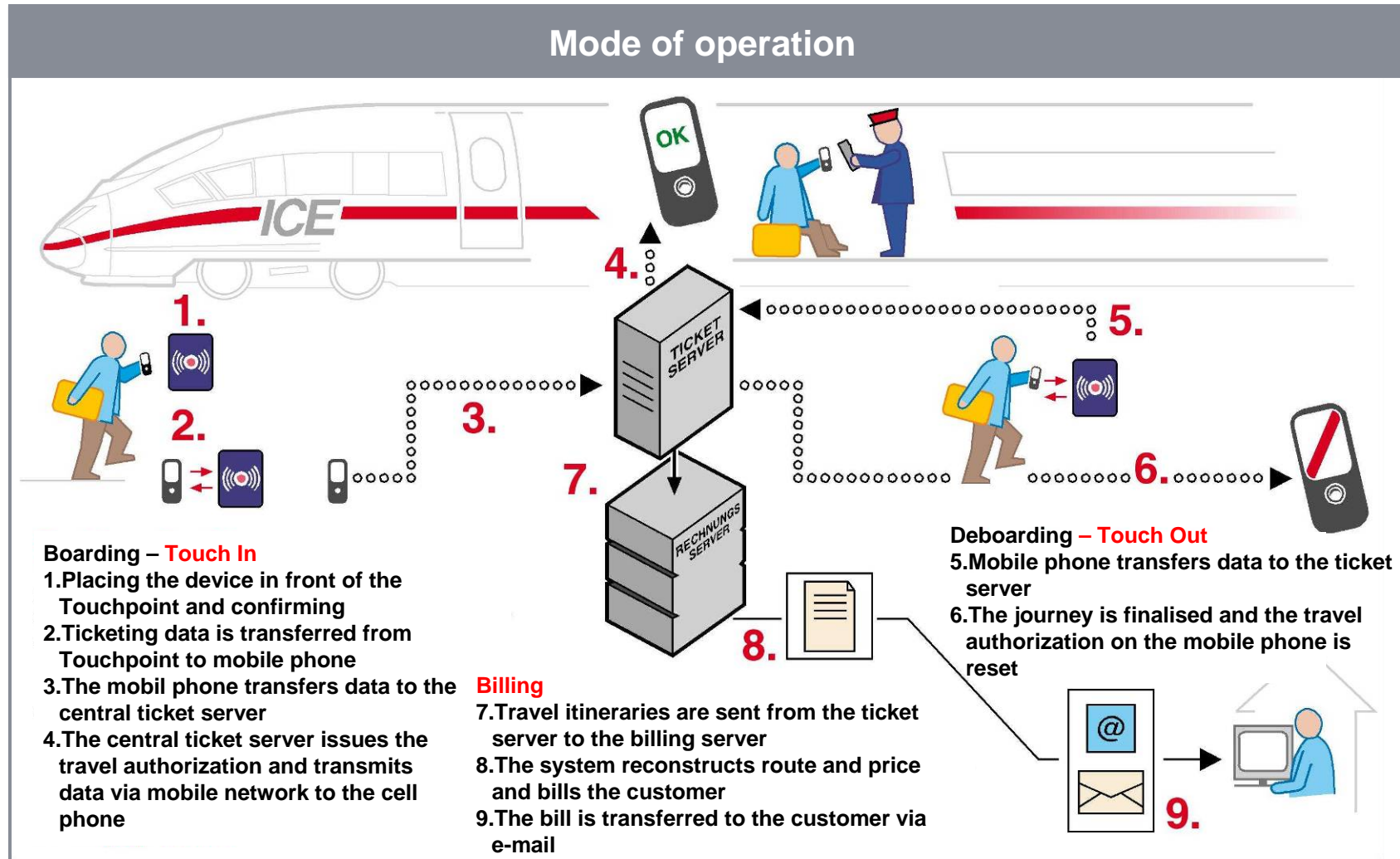
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## Billing



- Monthly billing

# The backend system calculates routes and prices based on the collected data



# Partners from public transport as well as from industry are involved

## A project by...



## ...in co-operation with...



ViP  
Verkehrsbetrieb  
Potsdam GmbH

## ...and the technology partners...



## At the moment 200 friendly users are testing the basic functionalities of the system



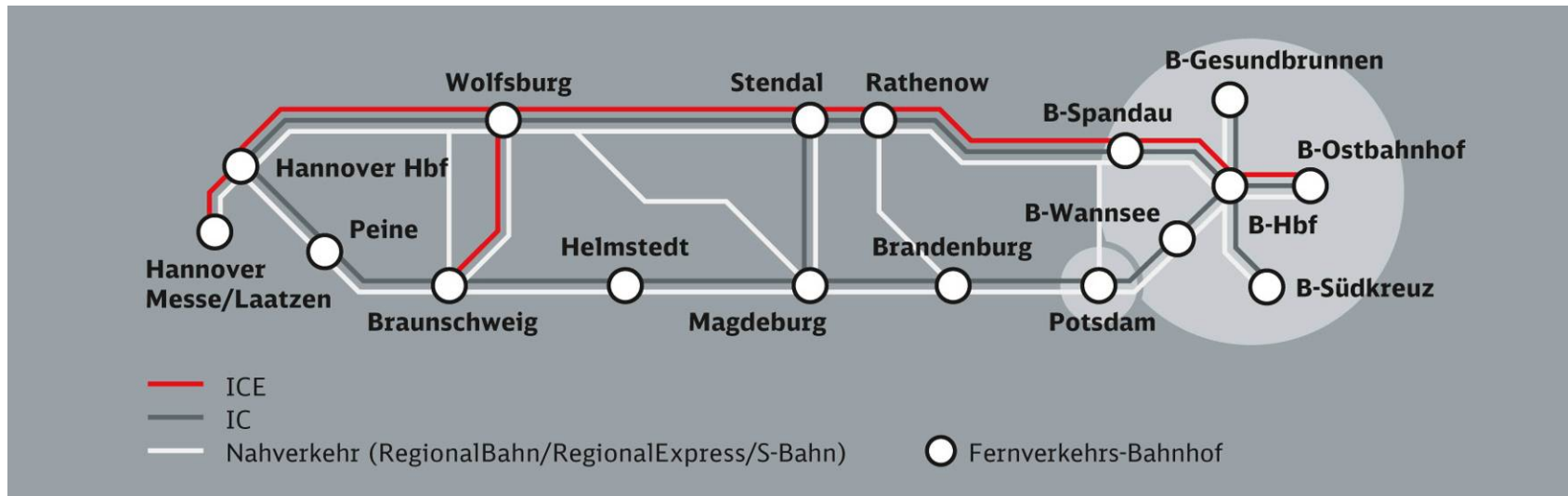
**First pilot phase**  
(started Feb 2008)

- 200 Friendly users are testing Touch&Travel for 6 months
- In addition, standard tickets are still required

**Second pilot phase**  
(to start Dec 2008)

- At least 2.000 users will be testing Touch&Travel as a real operating system
- Intensive market research will be conducted

# Touch&Travel – the pilot region



## Properties of the pilot region

- Complex structure guarantees transferability to Germany as a whole:
  - Long distance traffic Hannover-Berlin: alternative routes and parallelism of different types of trains (ICE, IC, RE)
  - City areas Potsdam/Berlin: Heterogenous networks with many different means of transport (different regional trains RegionalExpress and RegionalBahn, S-Bahn, tube, tram, bus, express-bus, ferry)

# Touch&Travel and the German eTicketing standard ,VDV Kernapplikation‘ (KA)

Touch&Travel is the only mobile phone based ticketing approach compliant with the ,VDV Kernapplikation‘ (KA)

- On the SIM a KA user medium is securely stored (smartcard applet developed by ATRON electronic, already utilised on smartcards in NRW, extended by special Touch&Travel functionalities)
- Personalisation and issuing of entitlements is done over-the-air (OTA)
- All transactions – personalisation, issuing, data collection, inspection – are executed according to the KA specification employing all mandatory asymmetric and symmetric cryptographic algorithms incl. certificates
- The new tag authentication has been discussed with the KA GmbH & Co. KG (custodian of the KA standard)
- Solely the security authentication modules (SAMs) are emulated during the trial phase using self generated keys



KA-Nutzermedium



# Outlook: Touch&Travel offers more than CheckIn/CheckOut

## Touch&Travel phones may store tickets bought before as well

- Using the German eTicketing standard ,VDV Kernapplikation‘ offers the possibility to store tickets like 7-day or monthly tickets securely
- Ticket inspection works exactly like in the case of smartcards
- Many ways to order the tickets are conceivable: WWW, WAP, Call-Center...
- CheckIn/CheckOut is performed only when the area of validity of the time card is left
- Synergies with smartcard approaches can be exploited



Picture sources: VRR, KVV, Wiener Linien, VDV (WWW)

# Agenda

- 1 Deutsche Bahn's general eTicketing position**
- 2 Touch&Travel: Automatic fare collection via mobile phones**
- 3 Questions?**