Data Mining and Data Analysis using the Example of cross-border Traffic Management during Extreme Weather Events

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Extreme Weather Events and the Impact for Mobility of Rescue Forces and the Public

- Extreme Weather Events
  - Affecting an entire region
  - Lead to blockage or destruction of traffic infrastructure

- Serious Consequences
  - Extension of travel time for the road users
  - Also Rescue Forces travel time will extend! (The right of way is here more or less “nice to have” ;-)
  - Accessibility in an area gets worse and the capacities for rescue logistics or an eventually evacuation are reduced

- Extreme Weather Events are affecting the mobility of rescue forces, the public and commercial transport!
Requirements for cross-border Transport and Logistics Management

- Reliable information about the situation
  - Which roads are still usable?
  - What’s the level of service there?
  - On which route can I move up forces and supply?

- Coordinated measures
  - How to keep the mobility of the rescue forces alive?
  - How to enable commercial transport and public mobility?
  - Who is allowed to do what?
  - Who is able to do what?

- All this - of course - across organizations and across borders
Availability and Verifiability of Traffic Data

- **Dilemma:**
  - Available sources can often not be verified in their quality.
  - Verifiable sources (e.g. traffic sensors) are often not available.
  - Actually no multiregional and reliable detection of the traffic condition exists, in particular availability of the *infrastructure*.

- **Danger:**
  - Unverified but public systems is given unthinkingly credence.
  - But: Just traffic data are highly dynamic data with strong tendencies to change.
DLR Approach for accessible and verified Traffic Data

1. Make existing “classic” data accessible (Sensors of Traffic Control Center)

2. Produce “further” data by other sources (Bluetooth, Floating Car Data, airborne monitoring, positioning system of rescue forces, …)

3. Verify by analyzing and comparing the data

4. Merge to a multiregional and multisensory operational picture (DLR EmerT System)
Classic Data mining

- Induction loops
- Infrared- and radar sensors
- Video sensors
- Magnetik field sensors
Data mining with Bluetooth

→ Cross border situation map is possible
→ Statements about the passability of the infrastructure
DLR EmerT System – multiregional, multisensory, inter-organizational

- Common Operational Picture across borders
- Functions for decision support, e.g. routing or accessibility of places
- Process management e.g. setting up a restricted area
VABENE beim Tag der Luft- und Raumfahrt in Köln-Porz
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Einsatz auf Zypern
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Thank You for your interest!

Busses approaching the World Youth Day 2005 on a Saturday Morning in Cologne
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