Methods to Measure Quality and Reliability of RDS-TMC messages
Overview

1. Introduction
2. Traffic Information Chain in Germany
3. Traffic Information Quality as Process Analysis
   - Main principle
   - Example: Location Code List
4. Conclusion

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1. Traffic Message Channel (TMC)

- specific application of the FM Radio Data System (RDS)
- used for broadcasting real-time traffic and weather information
- Coded data messages are received silently in addition to spoken radio program

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1. Message Text

- Motorway A3, Frankfurt to Dortmund, between motorway intersection Rath and Leverkusen stationary traffic for 10 km

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2. Message Processing: Information Chain

- Traffic management centre
- Police
- Jam buster
2. Message Processing: Information Chain

- Regional and national traffic information center (Police)

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2. Message Processing: Information Chain

- Public and private broadcasters (TMC)
- Audio announcement
- Others
2. Message Processing: Information Chain

- end terminals (radio), navigation systems

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3. Reliability and Quality of Traffic Info

- Trust information and choose detour?
- Don’t trust information and choose short distance?

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3. Existing Quality Approaches

• Comparison between real and reported traffic situation:
  - Reference data collection:
    - Manually (driving in non-affected direction, …)
    - Automatically (inductive loop, FCD, …)
  - Calculation model
  - Quality Indicators:
    - Error-rate (non-consistant messages),
    - Travel time divergency, …

Quality improvement lies in traffic detection system
3. New Approach

- New Approach to achieve process related quality improvements in information chain:

Traffic Information Quality as Process Analysis

Development of a two-dimensional analysis model as scientific basis for quality management system for TMC
3. Quality Measurement as Process Analysis

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3. Quality Measurement as Process Analysis

Information Chain

Event

Message sequences

traffic management

Message1

Message2

...

Message n

police

Message1

Message2

Message n

broadcaster

Message1

Message2

Message n

terminal

Message1

Message missing

Message n

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3. Quality Measurement as Process Analysis

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3. Quality Meassurement as Process Analysis

Quality indicators:

- update interval?
- Number of sources?
- Level of detail?
- Kind of cancellation?
- Freetext?
3. Quality Measurement as Process Analysis

Cause-And-Effect-Diagram

Data collection  Message coding  consolidation  Broadcasting  Reception, Decoding  Interpretation

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3. Example: Location Code List

Location Code List (LCL) [EN ISO 14819-3]

- Location-ID
- Type
- Subtype
- Road number
- Road name
- Offsets
- x-/y-Coordinate
- ...

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3. Example: Location Code List

Location Code List (LCL)

[EN ISO 14819-3]

Primary location

Secondary location

Offsets in LCL

Extend = 1

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Location Code List (LCL) [EN ISO 14819-3]

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Traffic Information Quality as Process Analysis

Cause-Effect-Diagramm for Mistakes in LCL content

effect

Data collection  Message coding  consolidation  Broadcasting  Reception, Decoding  Interpretation

Misinterpretation (extend attribute)

cause

Object logically wrong in LCL

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Conclusion

• New approach: Whole information chain systematically analysed – improvements possible in all iterations

• Empirical analysis currently in preparation

• Results will establish basis for quality management covering all partners