Urban Traffic Management: Understanding Short-Term Traffic Prediction Control Systems

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Content

• Traffic prediction as logical development step

• Prediction pixel effect and prediction window

• Simplified operational diagram for short and mid term prediction

• Conclusions
Traffic prediction as logical development step

- Fix time (no traffic dependency)
- Signal program selection (responsive control)
- Signal program calculation (adaptive control)
  - Successive program development
  - Split & cycle
  - Network coordination
  - Urban system integration
- Predictive adaptive (short term)

Current scientific and methodological development (Summer 2008)
Prediction pixel effect\textsuperscript{(1)} and prediction window

\textsuperscript{(1)} Prof. Klaus Banse, Universidad de Cartagena, Predictive traffic models, TMC Lecture, 2006
Prediction pixel effect and prediction window

Down Factors
- Number of parameters
- Number of data acquisition points
- Accuracy of traffic data
- Level of methodological integration
- Sophistication of traffic models

Up Factors
- Number of prediction parameters
- Number of interruptions (intersections)

Short term prediction
Mid term prediction
Long term prediction
Simplified operational diagram for short and mid term prediction

- Traffic Level
  - Traffic and incidents
  - Vehicle based information (VII)

- Control Level
  - Central Traffic Control and Management System
  - Transport management and other systems (on and offline)

- Prediction, calibration and learning loop
- Methodological Level
  - Traffic data and decision data base
  - Predictive algorithms, methods
    - Multi run network micro simulation
Conclusions

• Traffic prediction will be part of the majority of traffic management and control systems in the near future

• Traffic models, algorithms and methods can be independent from the traffic management system manufacturer

• Future investigation will be focusing on methods for automatic calibration and behavior models as well as self learning systems