Co-operation Traffic Management and Traffic Information

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The Idea Behind Traffic Management
Traffic Management Capability
Traffic Information Capability
Traffic Management and Traffic Information on a Single Platform
Complexity along three Dimensions
Public-Private Operation Models for Traffic Management and Traffic Information
Conclusion
The Idea Behind Traffic Management

Traffic Management

- Freeways
- Ring Roads
- Urban Traffic
- Events
- Public Transportation
- Parking
- Road Works
The Multi-Level System Architecture

**Strategic Level**
TRAFFIC MANAGEMENT SYSTEM
- Data Collection
- Refinement & Valuation
- Strategy Management

**Tactical Level**
- Parking guidance system
- Public transport system
- Urban traffic control systems
- Freeway management system
- CCTV

**Operative Level**
- Cameras
- Signals
- Detectors
- Signs

Measured data, systems status, etc.

Strategies, control settings, etc.
Cities run various independent traffic systems

Most systems do not interchange data

A TMS integrates these systems into a single application

Traffic Management thereby provides the basis for

1. Cross-System Traffic Strategies
2. Distribution of Traffic Information
How Can Traffic Management Help Your City?

- Achieve collaboration & central control of existing, independent traffic subsystems
- Comprehensively monitor & visualize traffic conditions in real time
- Provide value-added traffic information services to the public
- Improve road safety through incident detection & response management
- Prevent and actively fight congestion by intelligently influencing traffic on the road
- Demonstrate civil responsibility through a pro-active approach to traffic improvement
Traffic Information Capability

TRAFFIC MANAGEMENT / INFORMATION SYSTEM

- Service Platform
  - Incident Detection
  - Media Management
  - Strategy Management
  - GIS (LOS Visualization)
  - Response Plans

- Traffic Data Collection
- Message Management

- Visionary
- Operator Messages
- Roadwork System
- Highway System
- Weather Data

- Radar
- Loops
- Above Ground Detection (IR, µW)
- Video
- Floating Car Data
- Inciident Detection Subsystem Control

- TMC
- Location Coder
- Event Coder

- In-Car Navigation
- Cellular Phone

- Web Portal
- SMS
- LOS Visualization
- Radio
- VMS
- Parking

- Parking
- Radio
- In-Car Navigation

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Traffic Management and Traffic Information on a Single Platform

Traffic Information Capability

Traffic Management Capability

TRAFFIC MANAGEMENT / INFORMATION SYSTEM

Service Platform

- Travel Time Calculation for Links & Routes
- Traffic Data Collection

Incident Detection
- Media Management
- Strategy Management
- Response Plans

Message Management

Subsystem Control
- GIS (LOS Visualization)
- Traffic Management Capability

Traffic Control Center
- Above Ground Detection (IR, µW)
- Radar
- Loops
- Video
- Floating Car Data
- Operator Messages
- Roadwork System
- Highway System
- Weather Data

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The Value Chain for Integrated Traffic Management & Traffic Information Services

Traffic Data Collection

- Above Ground Detection (IR, µW)
- Video Detection
- Traffic Control Center
- LOS Visualization
- Floating Car Data
- Loops

Traffic Management System (e.g. Siemens CONCERT)

- Highway Systems
- VMS Signs
- Traffic Control
- Parking

Traffic Information

- Radio
- In-Car Navigation
- Off-Board Navigation Services
- Cellular Phone
- Web

Acquisition and collection of relevant data from various sources

Data fusion

Data qualification, aggregation and completion
- Intelligent processing of traffic data
- Real-time traffic situation
- Traffic forecast

Service generation
- Information transmission to various receivers
- Management of customer relation

Use of data for traffic management

Use of data for traffic information
Public-Private Operation Models for Traffic Management and Traffic Information in Germany

The Netherlands (Population: 18 Million)
Operation of TMC4U – Traffic Information Services for Car Navigation Devices
Contract: since 2003

North Rhine Westphalia (Population: 15 Million)
Contract: 2004-2017

City of Berlin/Brandenburg (Population: 6 Million)
VMZ Berlin – Design, Build and Operation of Traffic Management Systems and Traffic Information Services
Contract: 2000-2010

Province of Bavaria (Population: 12 Million)
VIB Bavaria – Design, Build and Operation of Traffic Management Systems and Traffic Information Services

In PPP Siemens is taking the lead as industry partner for public authorities

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Berlin: Integrated Traffic Control and Mobility Management

Traffic Information
- FCD
- VMZ

Traffic Control
- VKRZ
- Monitor, Control & Manage
- Optimized Traffic Control

Common Data Pool
- Traffic Info
- Intermodal Routing

Integrated Mobility Management

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Berlin: Integration of New and Existing Systems

- Inconvenient control of UTC subsystems
  - 22 old traffic control systems by different manufacturers
  - Limited possibilities for global traffic strategies across various independent UTC

- Challenges
  - No change to existing systems
  - Once a connection is severed, it can not be reestablished
  - Step-wise substitution approach
Ruhrpilot: Regional Network of Traffic Management Systems

5500 km² area
- 15 Cities
- 42 Municipalities
- 13 Transit operators

Objectives
- Monitor mobility conditions
- Provide mobility services
- Define and deploy cross-jurisdictional transportation management strategies
Complexity along 3 Dimensions: Commercial, Administrative and Technological

### Commercial

**PPP contract**

**Private Partner**
- System development, installation, maintenance
- Operations and services (free and commercial) until 2017

**Public Partner**
- Asset owner
- Control installation & services
- Quality management
Joint Forces Leverage the Deployment of Traffic Management Systems and Traffic Information Services

Siemens is committed to cooperating with public authorities

Traffic Data Collection
- Design, Build: Public
- Operation: Private

Traffic Management System
- Design, Build: Private
- Operation: Public

Traffic Information
- Design, Build: Free of charge services
- Operation: Value added services
Complexity along 3 Dimensions:
Commercial, Administrative and Technological

- **Administrative**

  Agreements
  - Availability of traffic data for common road network
  - Scope of transport management strategies
Complexity along 3 Dimensions: Commercial, Administrative and Technological

Technological

Data processing at central level
- Information Communication
- Databases
- Forecast & simulation
- Geo-Information System
- Traffic editorial office

Data aggregation and processing at municipal level
- Municipal data concentrator
- Traffic control centre motorway
- Control center of public transport operators
- Passenger information

Data entry individual traffic
- Detection
- UTC
- PGS
- Roadwork Information systems

Data entry public transport
- operation control centre
- Automatic Train Operation
- Passenger Information
- message data

Data acquisition and collection
Environmental Traffic Management

**Input**
- Pollution measurements
- Direct Measurements
- Air Quality Model

**Output/Result**
- Punctual pollution data
- Pollution situation for an urban area
- Critical spots, typical scenarios

**Today**
- Realtime Traffic Data, meteorology, topology, ...
- Sensor data, modeled data
- Defined traffic strategies

**Next Day**
- Strategy Implementation
- Verification
- Actual situation, expected situation

**Operative Traffic Management**
- Concrete traffic strategy
- Actions for operative traffic management

**Result**
- Improved traffic strategies
Conclusion

- Traffic management, information and control solutions
  - Integration is more than the sum of single parts ...
  - Traffic management, information and control on a single platform

- Various aspects of integration
  - Functional
  - Spatial / regional
  - Old and new

- Lessons learned
  - PPP contracts with high accuracy, tailored to the project specifics
  - Preserve and integrate existing infrastructure
  - Take into account the local transport policy and political guidelines

System modularity and open interface are Siemens SITRAFFIC CONCERT’s highly valued features
Thank you for your attention

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