

**18th International Transport Research  
Symposium, Madrid**

**The Informed and Oriented Transport  
System User  
November 2009**

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# Table of Contents

1. Introduction – The Idea
2. Scope of the Project
3. Missing Links, Contribution of Meta Data Platform and Potential Users
4. Architecture of Meta Data Platform Road Traffic
5. Next Steps

# The Idea (1)

- In 2006 the German government started a so-called high tech initiative
- Federal ministry of transport, building and urban affairs decided to support among others modern and innovative transport technologies and services.
- Securing mobility of persons and goods is vital for success and competitiveness of a modern society
- The idea of a meta data platform was created.
  - Contributions to save resources and environment
  - Make transport safer, more flowingly, more efficient and more undisturbed
  - Free access to information on all modes of transport should be enabled

# The Idea (2)

- Provide better and more reliable information, orientation and on the long run real time dynamic data
- Both individual and public transport have been considered
- Potential users and experts have been involved in the definition of requirements
- Serve as link between service providers and content owners
- Should not affect competition between service providers
- Shall enable business cases

# Coordination and Co-operation of Two Ministries

- Ministry of transport, building and urban affairs focuses on:
  - Road transport
  - Ownership and user rights for public transport
  - Quality of traffic data for public transport
  - Further development of superregional timetable information
  - Electronic fare management
- Ministry of economics and technology focuses on:
  - Quality of traffic data for road transport
  - Routing in rail transport
  - In-door-routing in interchange stations
  - Door-to-door routing
  - Requirements/Improvements of for handicapped people

# Previous Work

- Studies to identify state of the art and identify missing links have been carried out:
  - Detection in road traffic
  - Methods and practice for georeferencing
  - Existing data models, technical interfaces and protocols in road transport
  - Methods and procedures to define quality of traffic data in road transport
  - Analysis and survey of existing information platforms in
    - Road traffic
    - Public traffic

# Examples for Relevant Traffic Information Platforms

- **Germany**

- Mobile in rhineland
- Ruhr pilot
- Traffic management centre in Berlin
- MoBIN in Baden-Württemberg
- Traffic information centre in Bavaria
- Traffic information in North-Rhine-Westphalia
- Traffic management centre Hesse
- Timetable information systems in public transport

- **European**

- CENTRICO
- CORVETTE
- EURORoads
- CERTI
- Streetwise
- Travel information highway Great-Britain
- National data warehouse the Netherlands
- Viking
- eMotion
- EU-Spirit for public transport

1. Introduction
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# Intermodal Transport



## Road Transport

Highways,  
Long distance roads  
Feeders  
City roads

## Support for Special Offers

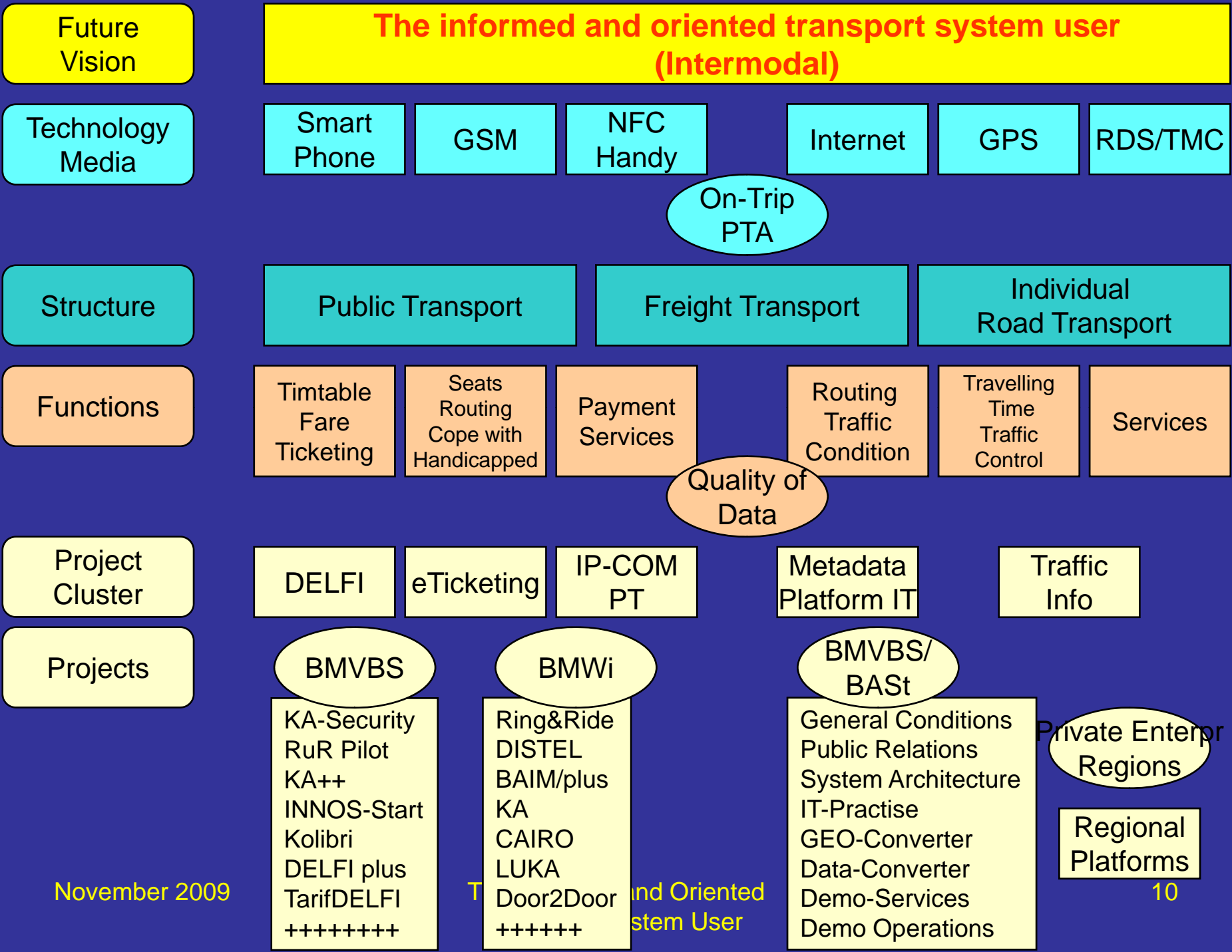
Location Based S.  
Weather  
Hotels  
Parking  
P+R  
Roadworks  
Big events  
+  
+



## Public Transport



# The informed and oriented transport system user (Intermodal)



November 2009

The Informed and Oriented Transport System User

### Road Network

- High ways
- Long distance roads
- Country roads
- District roads
- Local roads
- Network dangerous goods

### Public Transport

- Network
- Timetable/Offer
- Stops
- Demand-oriented offers
- Offers for handicapped
- Fares
- Real time data

### Road Network

- Pedestrians
- Cyclists

### Freight Transport

- Depots
- Inland Ports
- Seaports

### Parking

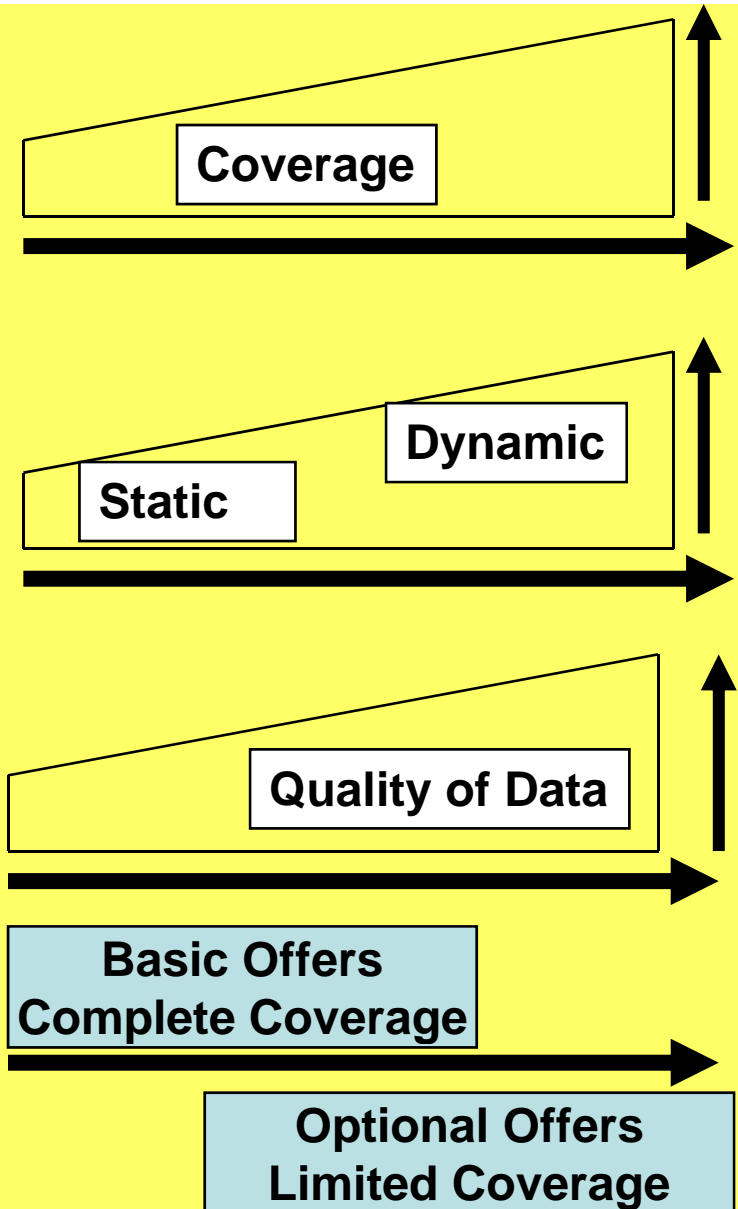
- Surface roads
- Stations
- Airports
- P+R

### Air Transport

- Timetables
- Real time

### Tourism

### Content for Information

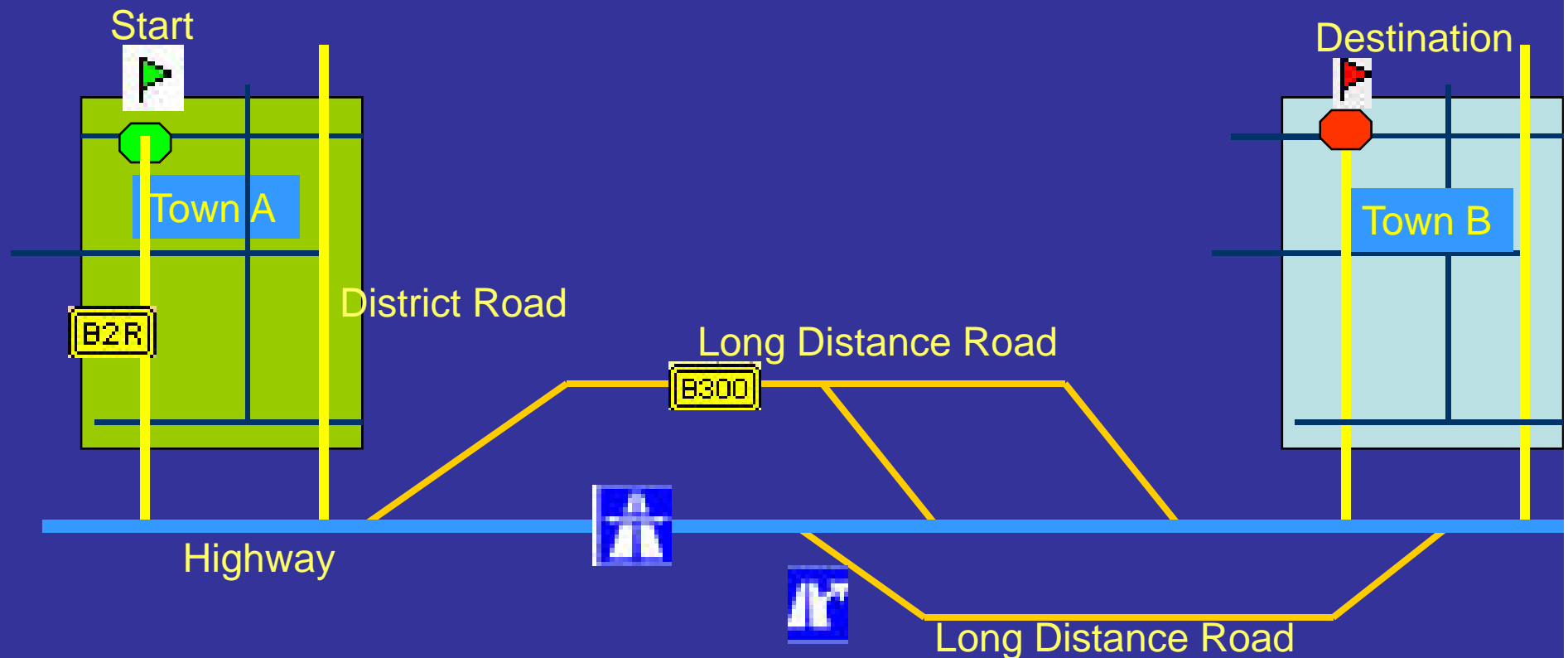


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2. Scope of the Project
3. **Missing Links, Contribution of Meta Data Platform and Potential Users**
4. Architecture of Metadataplatform Road Traffic
5. Next Steps

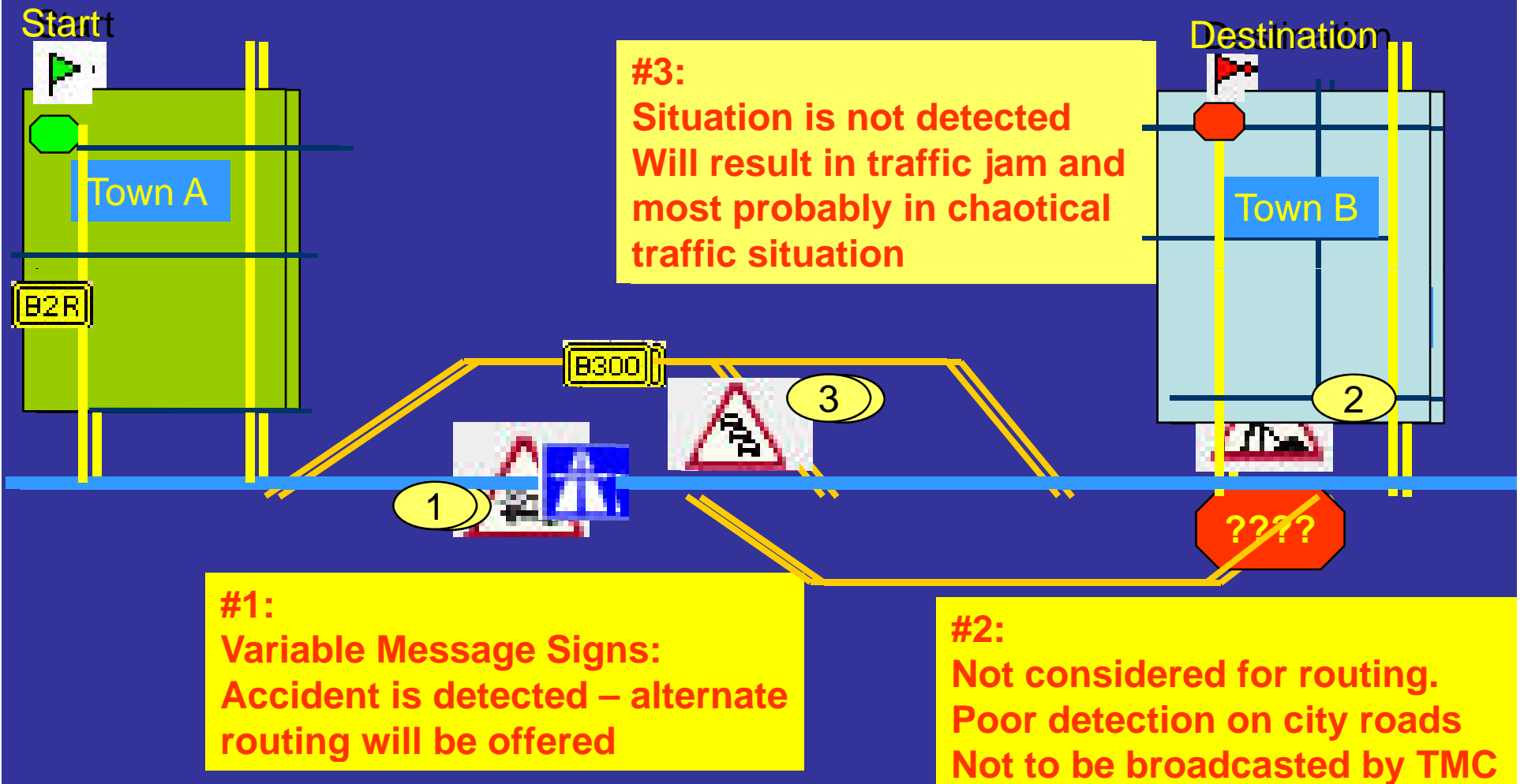
# Most Important Missing Links for Road Transport

- Detection does cover only specific areas
- Different georeferencing methods are used
- Different data protocols and technical interfaces are used
- Quality of traffic data is not defined and in most cases unknown

# Example for Routing in Road Network



# Examples for Breakdowns (in Germany)



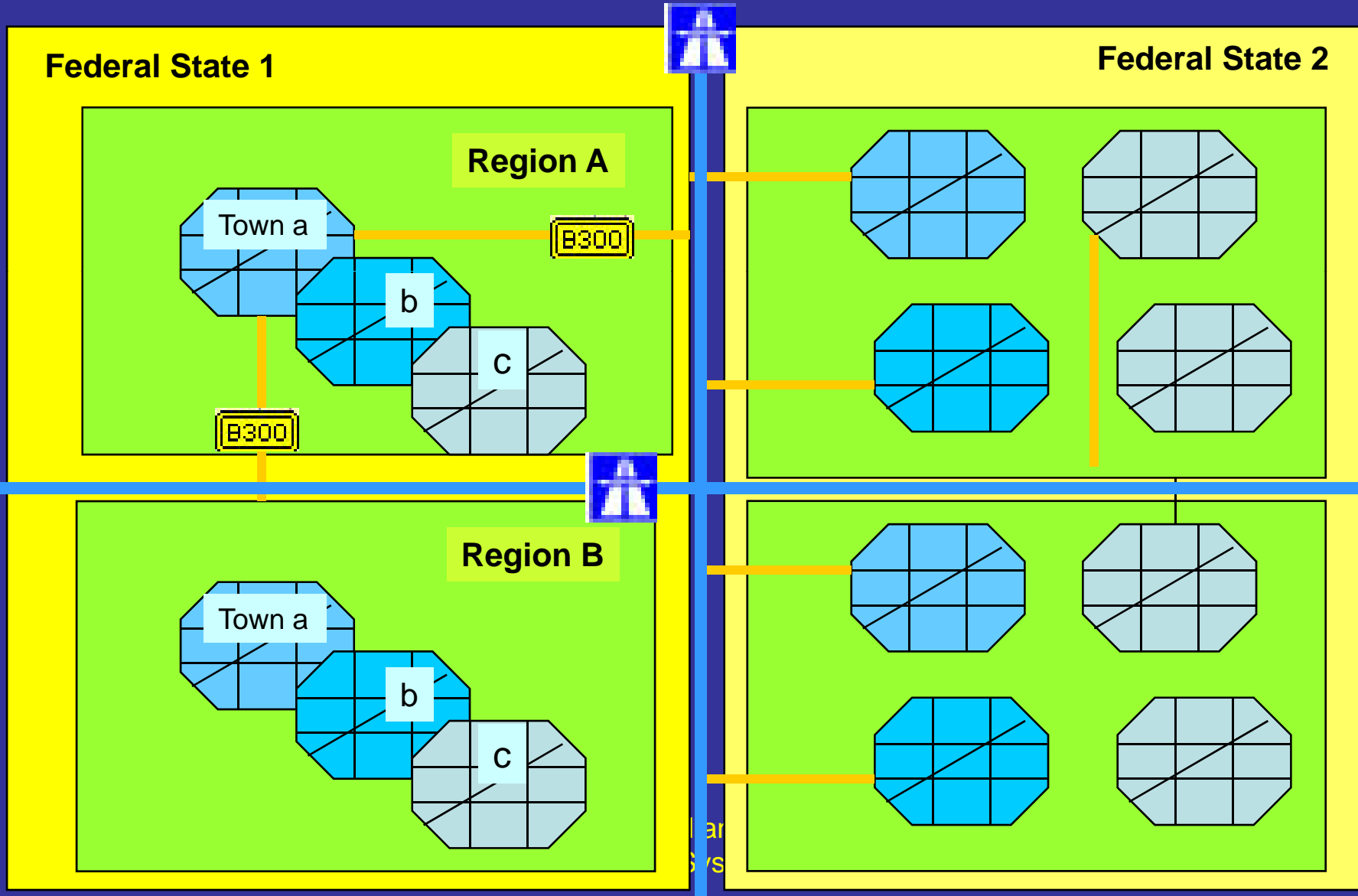
Traffic Data Quality not known and not yet defined

# Contribution of Metadataplatform Road Traffic

- Metadataplatform shall enable access to various sources:
  - Sensors/Detection
  - Traffic Computers of cities
  - Controls of Traffic Lights
  - Regional Information Platforms
  - Traffic Computers of Federal States
  - Private Content Providers
  - Computerized Information Systems for Road Works

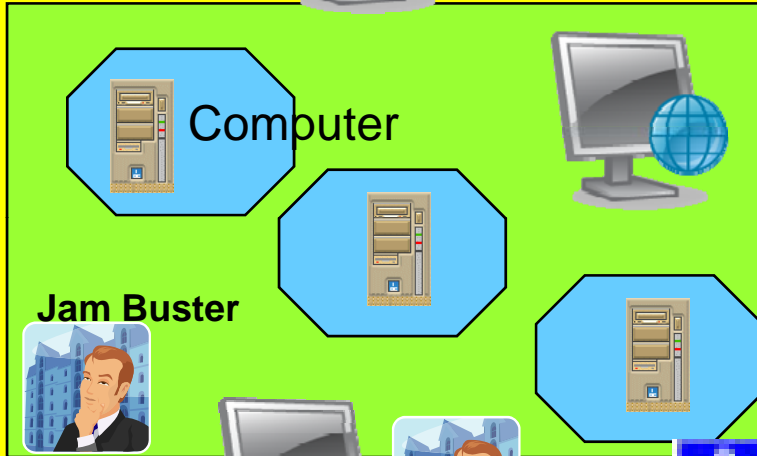


# (Geographical) Situation (in Germany)

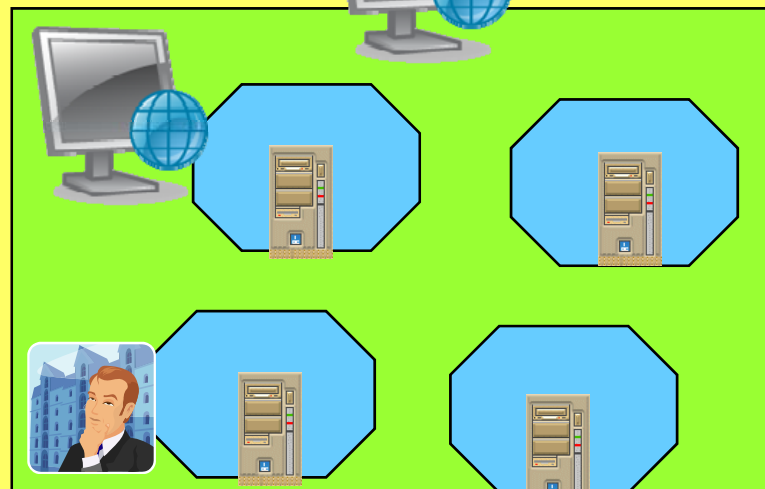


# Computers available in all States, all Regions, many Cities, along long distance roads (in D)

Federal State 1



Federal State 2



ard  
ys e

# Is there any Problem for Transport Management? YES!!!



Server for regional and superregional  
Traffic Management

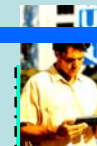
Proprietary effort needed due to various interfaces and protocols

Federal State A

Federal State B



Computer



Jam Buster



Jam Buster

# Contribution of Metadataplatform Road Traffic

- Metadataplatform enables business cases and allows access to central services:
  - Central service for processing different methods of georeferencing
  - Further development of models for data transfer
  - Algorithms for translation of existing standards
  - Algorithms and benchmarking of data quality

# Potential Users of Metadataplatform Road Traffic

- Service providers which offer individual services to their customers
- Administration for improvement of traffic management
- Broadcasting stations for traffic warning news
- Traffic planners
- City planning institutions/authorities
- Environmental authorities
- Freight transport and logistics

# Most Important Missing Links Public Transport (Germany)

Needed for superregional timetable information and connections:

- Door-2-Door timetable (84 out of 99 investigated regional transport entities offer door-2-door)
- Mobile information is limited to large transport systems
- Tariff-DELFI <sup>1)</sup> (at present no automated fare information is possible via internet)
- Electronic fare management has to be included
- Only strictly limited service for handicapped people available
- Common definition of data quality not existing
- Definition/Clarification of ownership and user rights

<sup>1)</sup> German electronic timetable information system

# Potential Users of Metadataplatform Public Transport

- Customers of public transport via service providers
- Companies which plan, operate or manage public transport
- Traffic planners for their daily actions
- City planning institutions
- All other service providers

# 1. Introduction

## 2. Scope of the Project

## 3. Missing Links, Contribution of Meta Data Platform and Potential Users

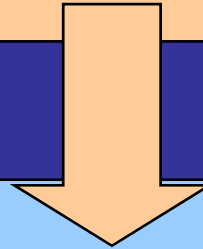
## 4. Architecture of Metadataplatform Road Traffic

## 5. Next Steps

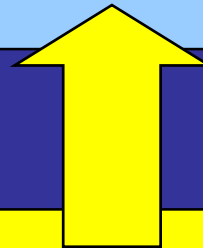


# Metadataplatform – an Element of the Value Chain

Private and Public Service Providers

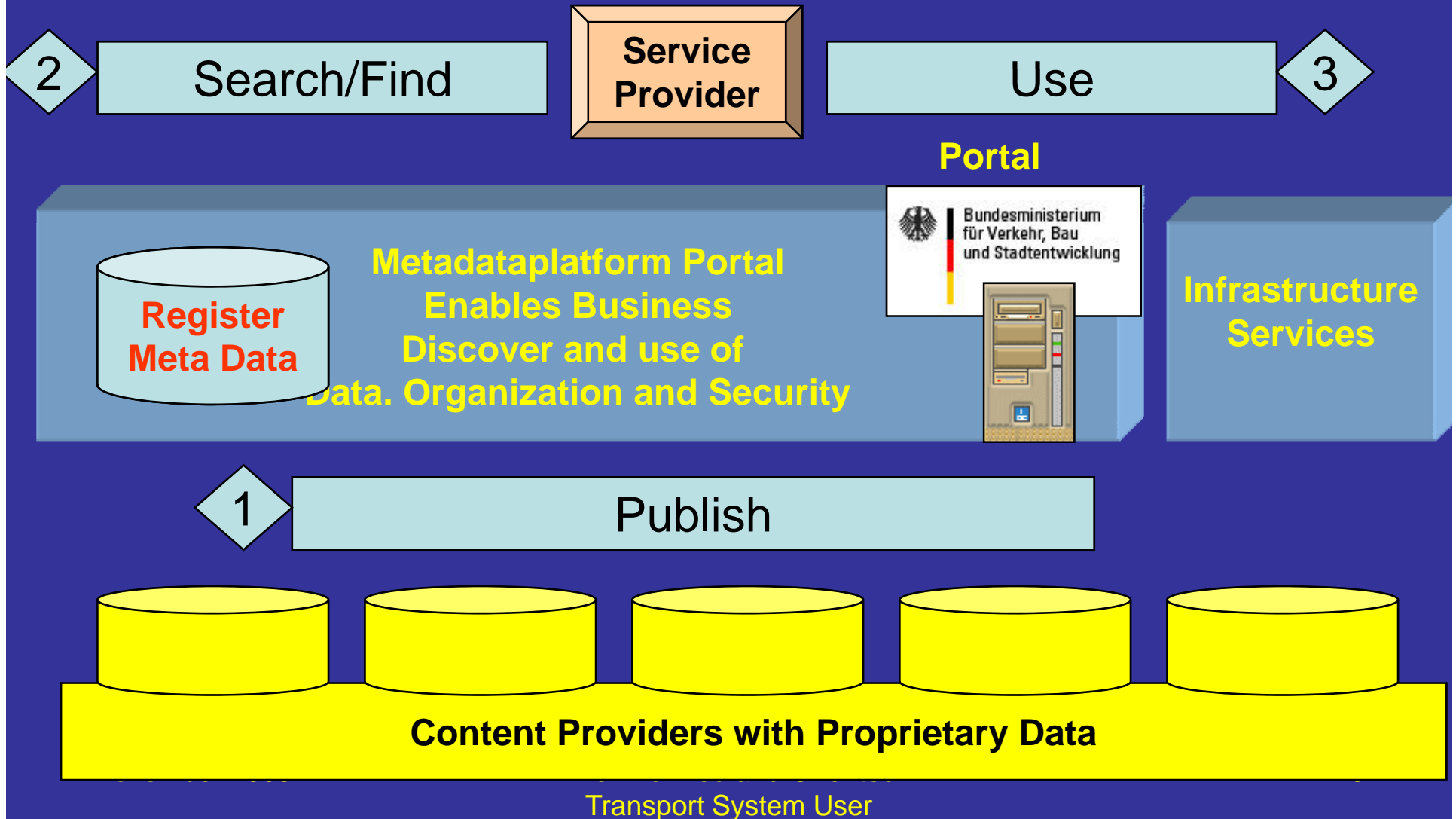


**Metadataplatform**  
As virtual internet platform  
With linklist, brokerage, fixed rules  
And recommendation for use of centralized infrastructure services



Content – Content Owners

# The Virtual Internet Platform Recommends Access to Centralized Services



# Metadataplattform shall enable Business for Content and Service Providers



The Informed and Oriented Transport System User



Service Provider

Service Provider

Service Provider

Service Provider

Service Provider

Service Provider



Metadataplattform-Portal



Infrastructure-Services



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- 5. Next Steps**

# Metadataplatform Road Transport

- General project management by Federal Highway Institute BAST
- Call for tenders/realization:
  - Organizational and legal framework
  - Project control
  - Public relations
  - Proof of concept – system architecture
  - IT Realization
  - Converters GEO (after development phase not part of metadataplatform)
  - Converters Data Interfaces and Protocols (after development phase not part of metadataplatform)
  - Pilot services
  - Pilot operation Metadataplatform road transport

2006

2009

2011

2013

# Metadataplattform Public Transport

- Further Development of DELFI (German Electronical Timetable Information)
- Initiation of TariffDELFI (Fare Information)
- Further Development of Electronic Fare Management Modules
- Initiation of Internet Protocol Communication for Public Transport
- Initiation of Door-2-Door Projects
- Initiation of Data Quality Modules
- Analysis of Ownership and User rights
- Initiation of Indoor Routing Modules
- (in close co-operation with BMWi-German Ministry of Economics and Technology))