

Seamless Multimodal Integration for Smart City Public Transportation Network

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"The adverse impacts of growth in motorization"

- in economic, environmental and social terms - are ruining the quality of life in our cities and our global climate.



Imagine China, 2010

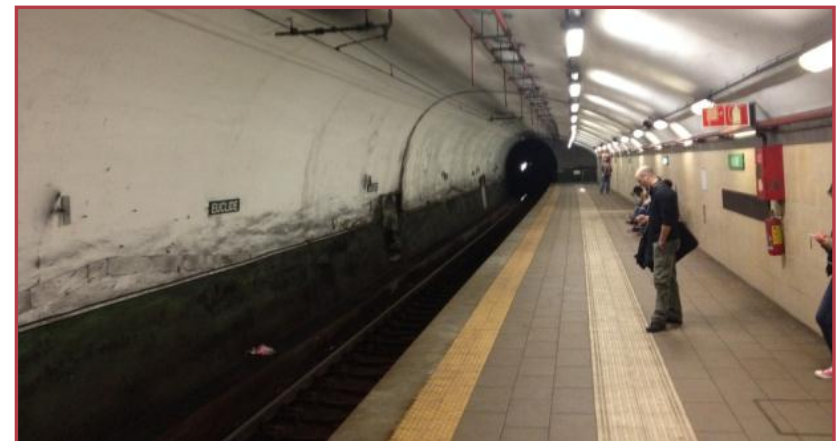


Carlos Pardo, 2008

Unattractive public transport systems

- Insufficient physical integration of various public transport modes and between public transport, walking, cycling and private car
- No integrated and transparent time schedules
- Signage, customer information on timetables, connecting services and fares not appropriate

→ discouraging the use of public transport



Unattractive public transport systems

- Insufficient cooperation between public transport operators
- Each change of mode normally requires the purchase of another ticket
- No uniform service level standards among modes and operators





The reality in most cities:

Public transport is underdeveloped, not attractive enough for customers (often 2-4 tickets are required to get to work per direction)

There often exist stand alone systems (Bangkok, Manila, Kuala Lumpur....) without proper physical, time table- and fare-integration

Fares are collected at vehicles (causing slower services)

Urban transport responsibilities are often fragmented between various ministries, provincial and municipal level

Looking forward:

Public transport integration is the challenge during coming years to considerably increase attractiveness of PT!



Redefining Public Transport, Why?

CO₂ emissions from passenger transport vs. modal split: mode share can be influenced by policies and infrastructure

	% of public transport, walking and cycling	CO2 emissions (kg per capita per year)
Houston	5%	5690 kg
Montreal	26%	1930 kg
Madrid	49%	1050 kg
London	50%	1050 kg
Paris	54%	950 kg
Berlin	61%	774 kg
Tokyo	68%	818 kg
Hongkong	89%	378 kg



What do citizens want?

- ✓ Convenience
- ✓ Easy Access
- ✓ Comfort
- ✓ Frequent Service
- ✓ Rapid journey
- ✓ Safety & Security
- ✓ Customer Service
- ✓ Affordability
- ✓ Have a network



**Public Transport
should be
designed around
the customer and
not around a
technology**

Integrated transfer stations



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Station Design



- Passenger friendly designs?
 - Clear signage, disabled friendly
 - Better interchanges
 - Public amenities



Corporate Design



Albertplatz

Linie	Richtung	In Min
6	Niedersedlitz	3
7	Gorbitz	4
7	Weixdorf	4
11	Zschertnitz	5
11	Bühlau	6
8	Hellerau	6
3	Wilder Mann	8
3	Coschütz	9
8	Südvorstadt	11
7	Weixdorf	12

DVB VVO

Widget: DVB-Abfahrtsmonitor

Fahrplanauskunft

Startort: Dresden
Haltestelle: Albertplatz

Zielort: Dresden
Haltestelle: Nürnberger Platz

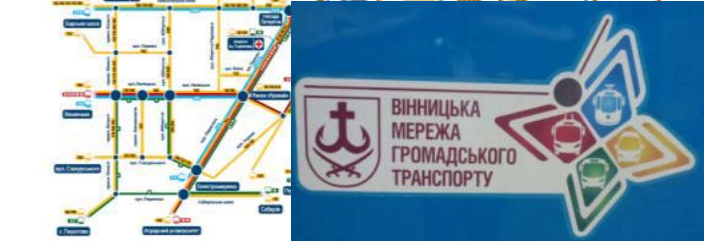
Abfahrt Ankunft

Datum: 28.01.2008
Uhrzeit: 13:39

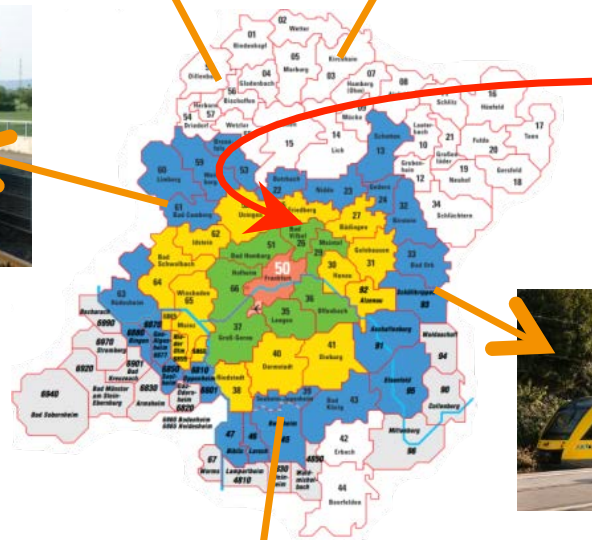
ABSENDEN

DVB VVO

Widget: DVB-Fahrplanauskunft



Integrated Fares & Ticketing



One timetable

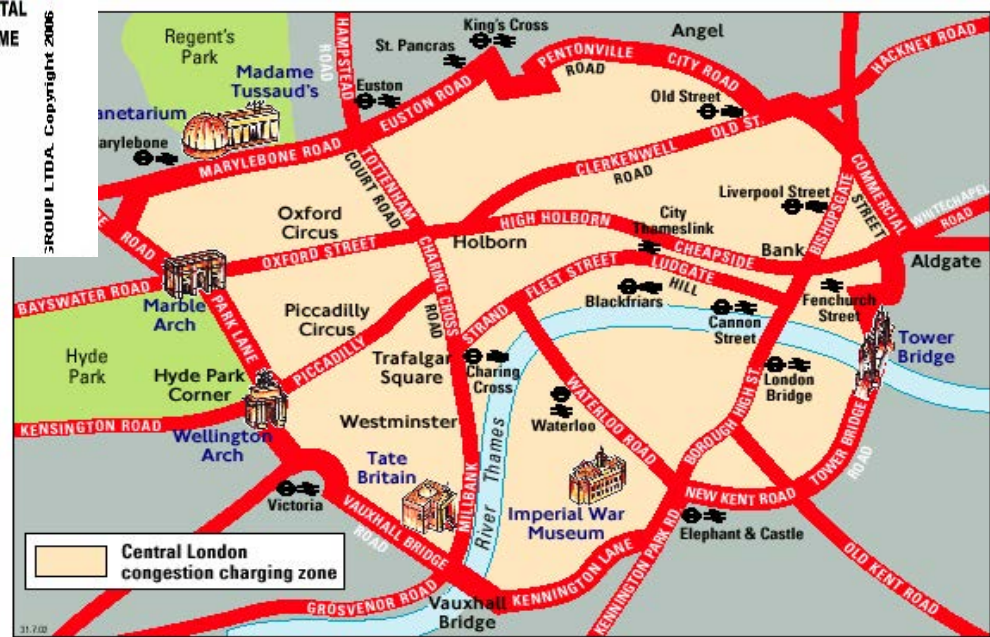
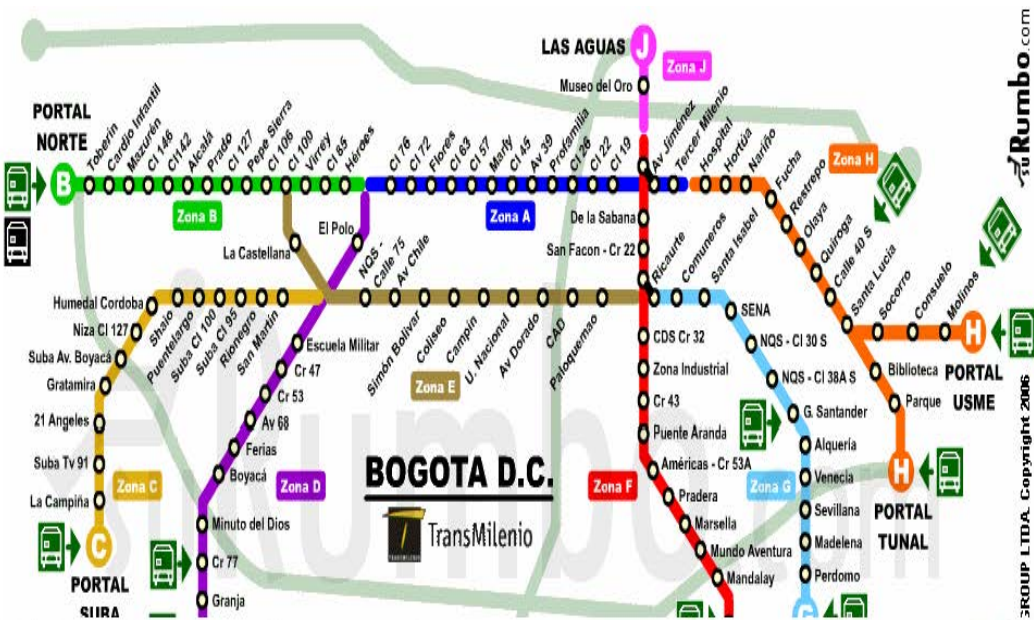
One fare

One ticket

→ Includes all public transport modes with different operators

Network coverage

Can I reach the CBD, shopping district, my home?



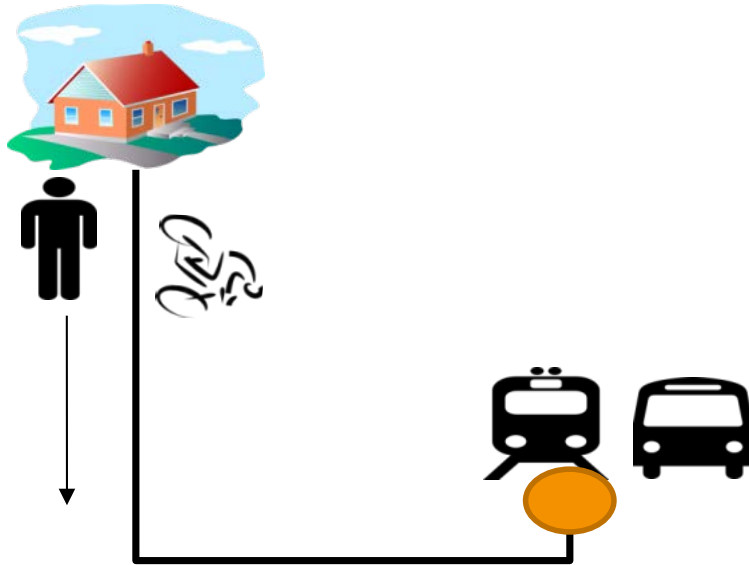
Public Transport priority



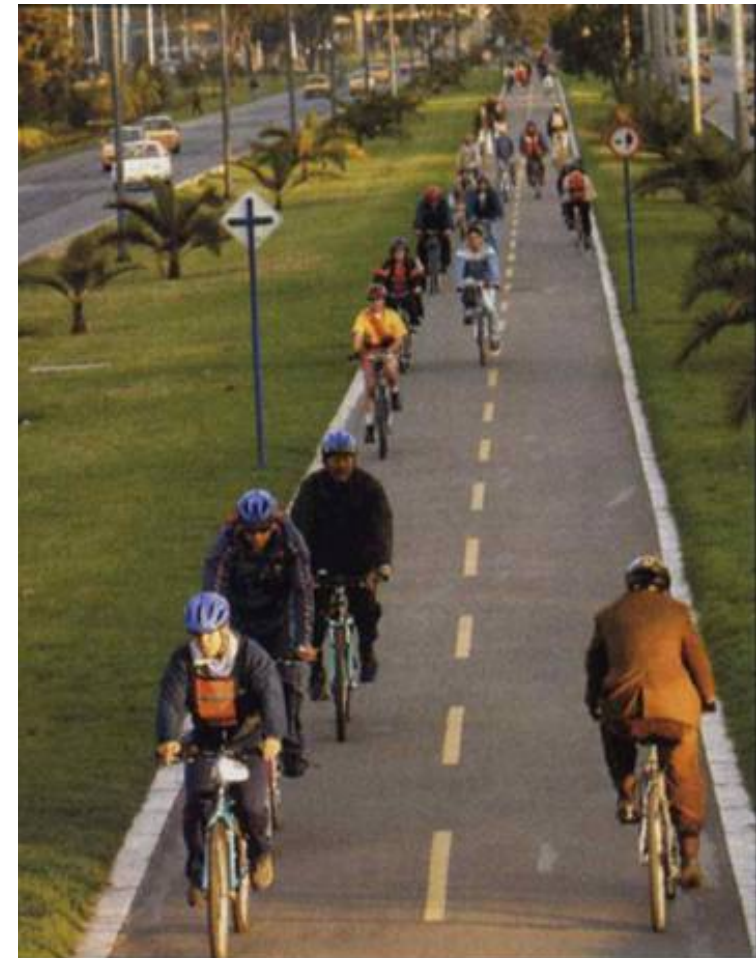
Is PT prioritized over other modes?



Accessibility- Options



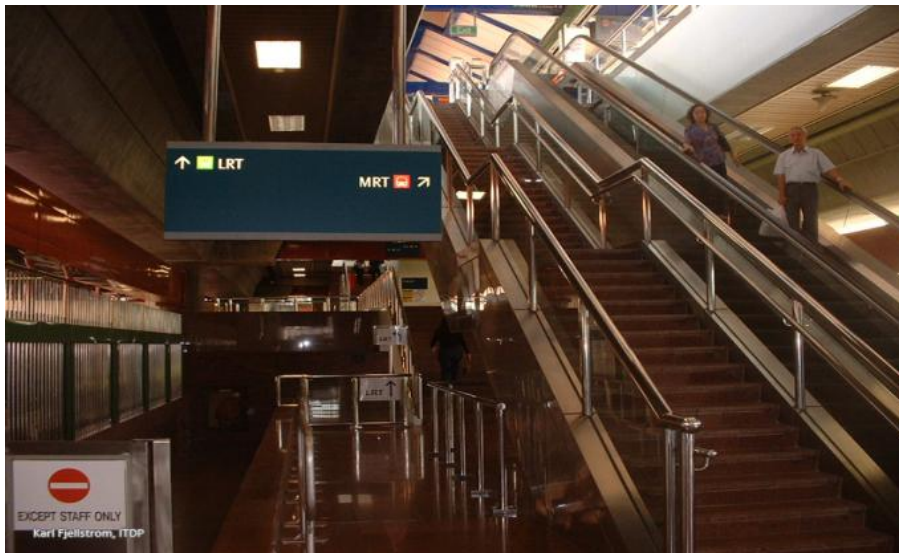
- How to reach the PT station?
 - Walk, bike or drive
 - How good is the path?



Modal Integration



Can an individual take his/her bicycle? Is it easy to walk? Should he/she can drive to the station?



Unified service quality standards: The Oslo Metro Customer Charter

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1. We leave on schedule.
2. We will not leave early.
3. You will be informed of an approaching stop.
4. You will always know where we are going.
5. Information will be available before you board.
6. Information will be available on board.
7. We will answer your questions.
8. You will be informed when things go wrong.
9. Carriers will be clean, making your journey pleasant.
10. We will reply when you write to us.
11. We will listen to you.
12. We pay if you arrive late.





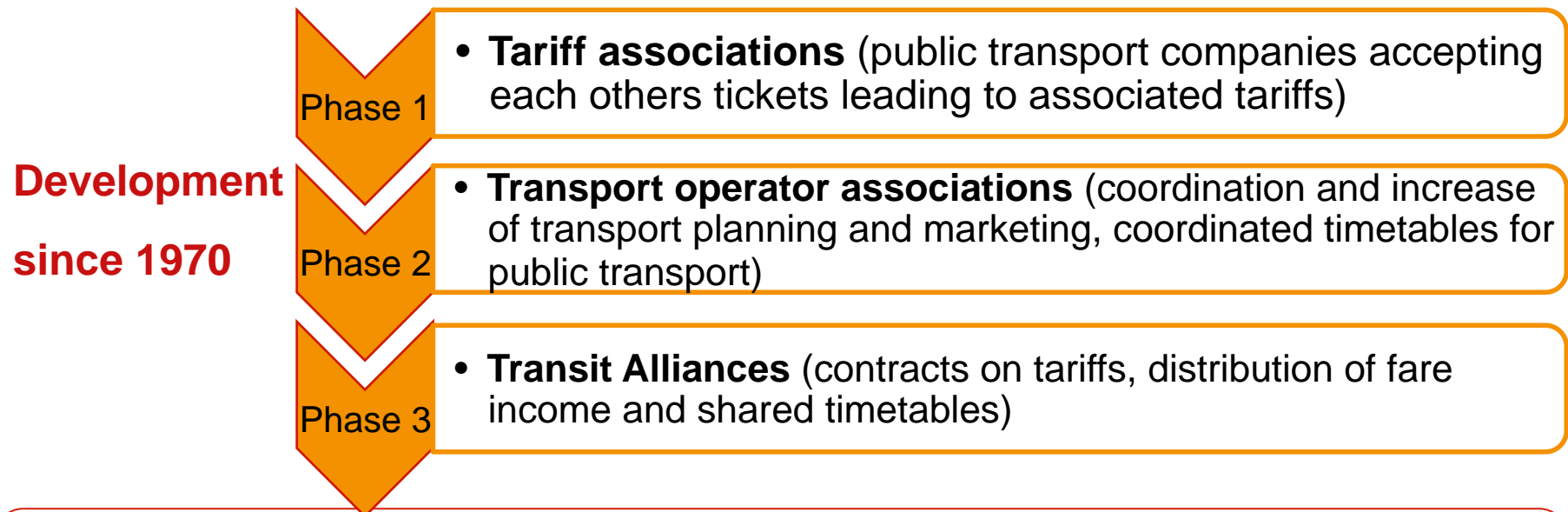
Transit Alliances as organiser of integrated public transport



History of public transport integration in Germany

Germany before 1970

- every transport company had its own tariff for local public transport
- no transparency in tariffs and no integrated coordination of schedules
- Tickets of different transport companies were not accepted by the others



Today:

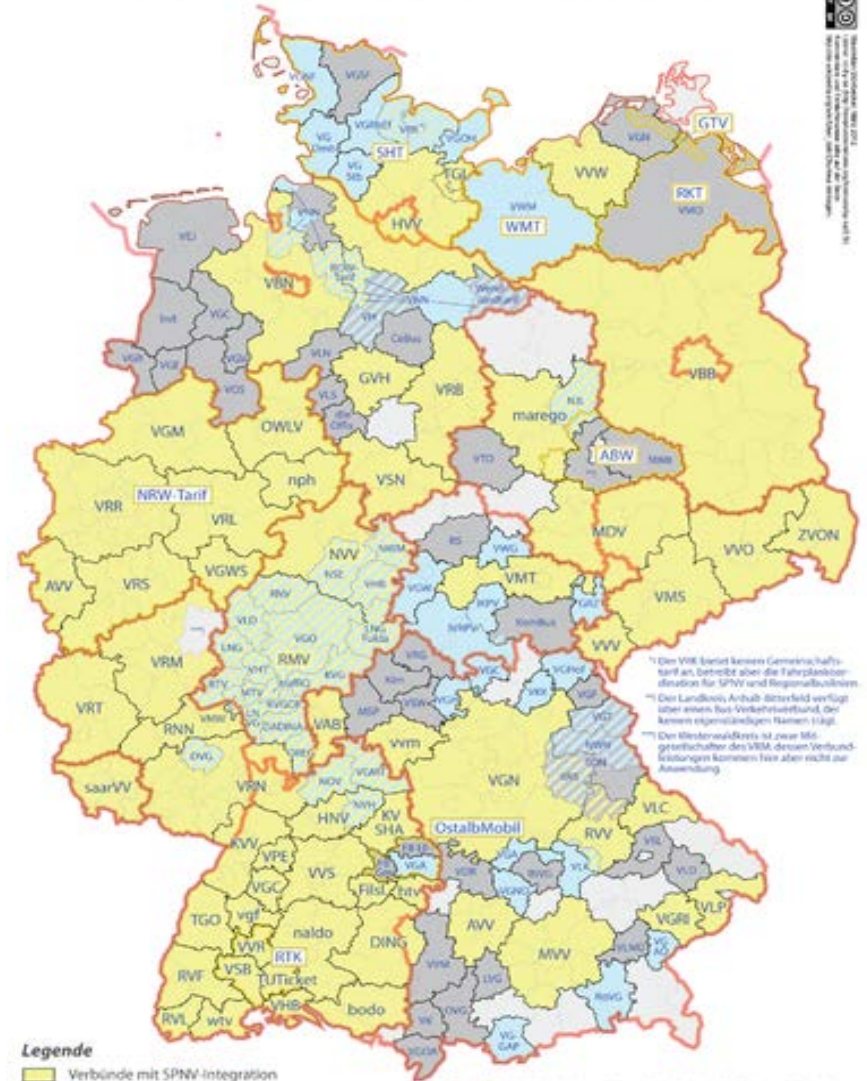
Transit Alliances all over Germany (Austria, Switzerland, Netherlands, ...)

Transit Alliances in Germany

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Verkehrs- und Tarifverbünde in Deutschland



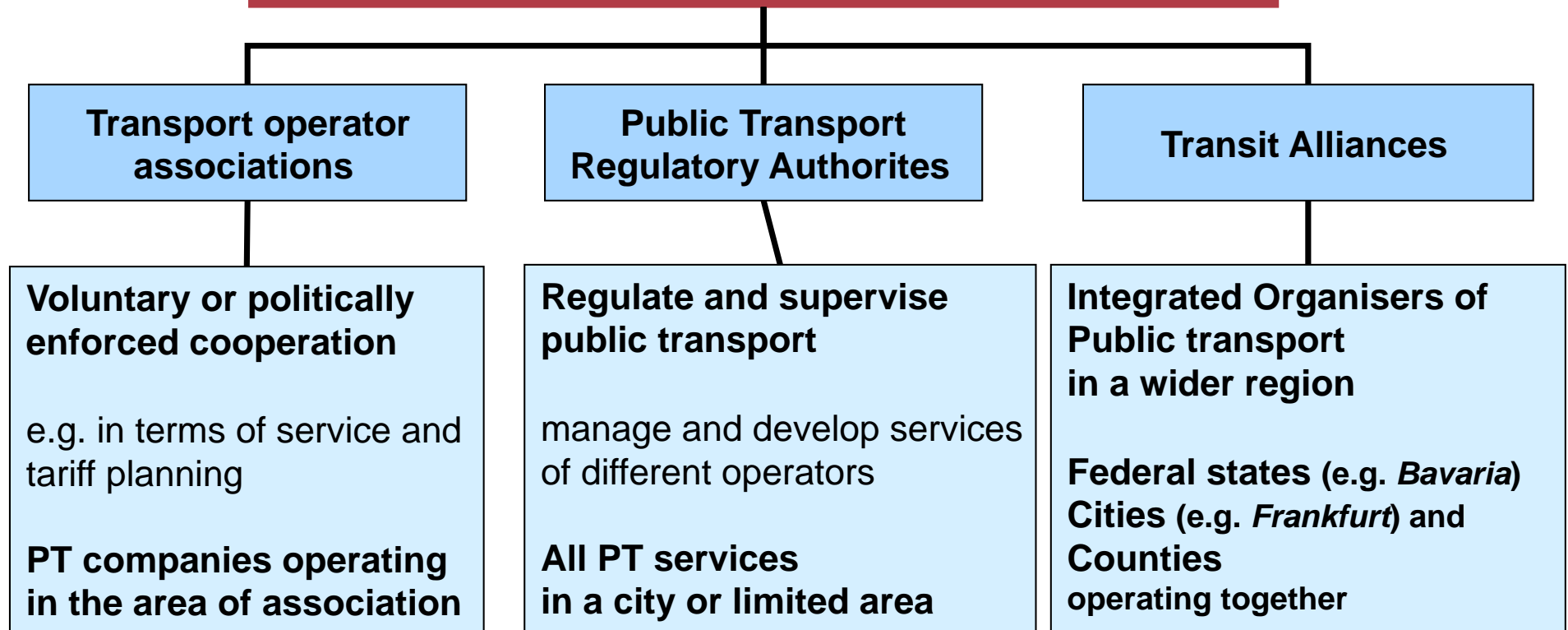
Legende

- Verbünde mit SPNV-Integration
- Verbünde ohne SPNV-Integration
- Teilgebiete eines Verbunds mit SPNV-Integration, in denen ein weiterer Verbund mit eigenständigem Tarif für die Regionalbuslinien operiert
- Teilgebiete eines Verbunds mit SPNV-Integration, in denen einem weiteren Verbund die Fahrplankoordination der Regionalbuslinien obliegt
- Verbünde ohne Gemeinschaftstarif, die nur Fahrplankoordination betreiben
- Gebiete, in denen die Zuständigkeiten für Gemeinschaftstarif und Fahrplankoordination bei unterschiedlichen Verbänden liegen
- Dachtarife mit SPNV-Integration
- Verbundfreie Gebiete

Source: Wikipedia

Public Transport Integration - Cooperation is the key!

Tariff and Transport Alliances



increasing complexity: *several companies, tariffs, cities, counties, states etc. to integrate*

Regional Transit Alliance (Verkehrsverbund)

- Network of integrated urban & regional transport services
- Based within a defined transport area
- Up to now mostly in Germany, Austria and Switzerland, and some other European countries
- Umbrella alliance' covering different local & regional carriers

One timetable

One fare

One ticket



Advantages of Transit Alliances

... for the **customer**

- Free choice of public transport mode (*e.g. bus , tram, regional rail*)
- Comprehensible strategy „*one fare - one ticket*“
- Coordinated timetables (*best connections*)
- Minimum standards for service quality
- One face to the customer

... for the **operator**

- Synergy effects for marketing, customer information etc.
- Unification of distribution (*e.g. ticketing*)
- Simple fare system for all public transport systems
- Consistent market presence
- Demand on PT increased considerably since creation of the transit alliances, e.g. in Munich and Hamburg 3 to 4 fold.

Experience of German associations over nearly 40 years (since 1965)

→ This led to increasing demand and increasing fare income

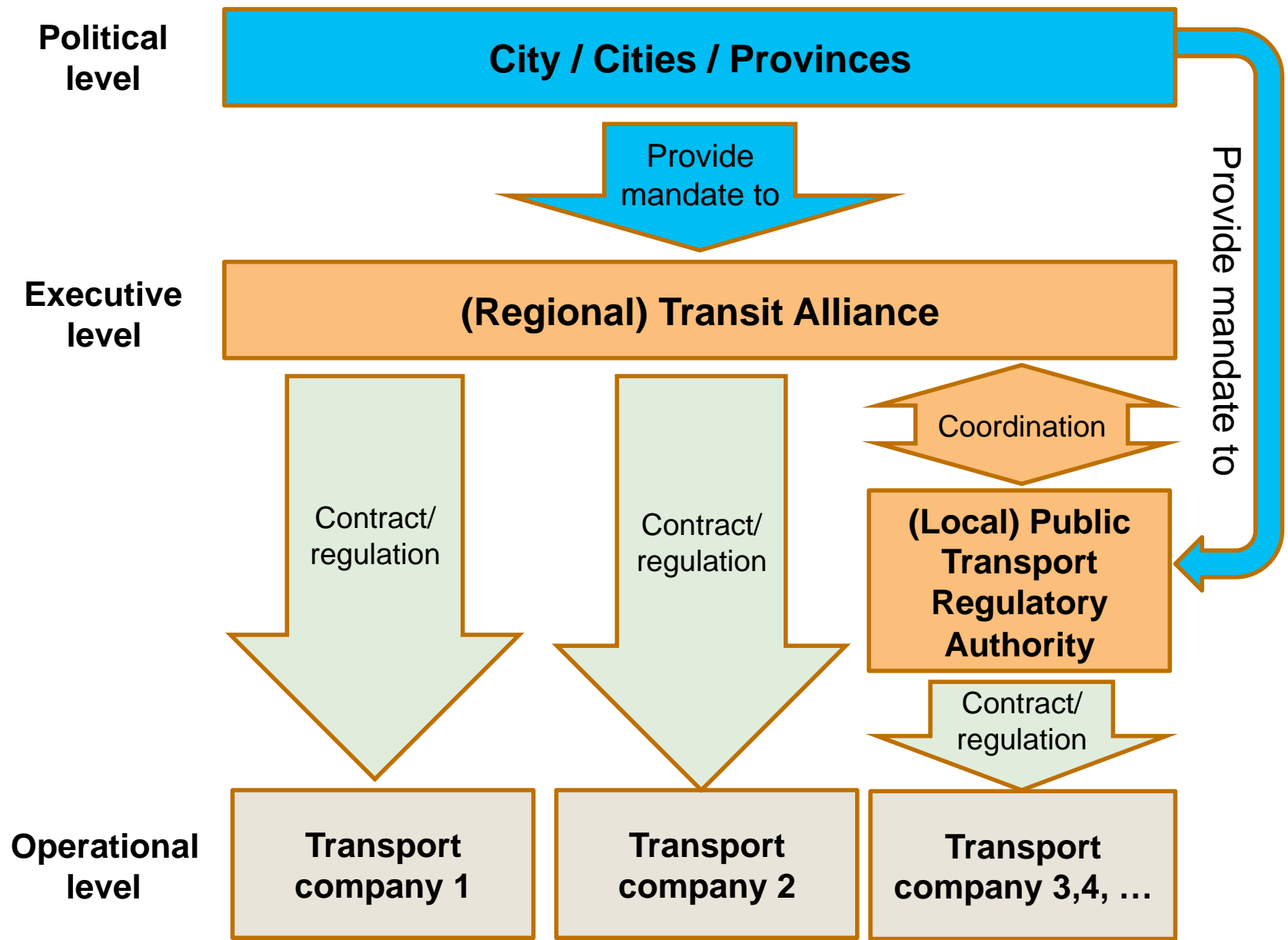
Transit Alliances

From the perspective of local authorities

- Limiting the expenditure of public funds
- Tool for spatial planning and urban development
- Political motivated objectives
- Regulatory, social or environmental goals
- locational factor or image for foreign companies or visitors



3-level organisation of local and regional public transport

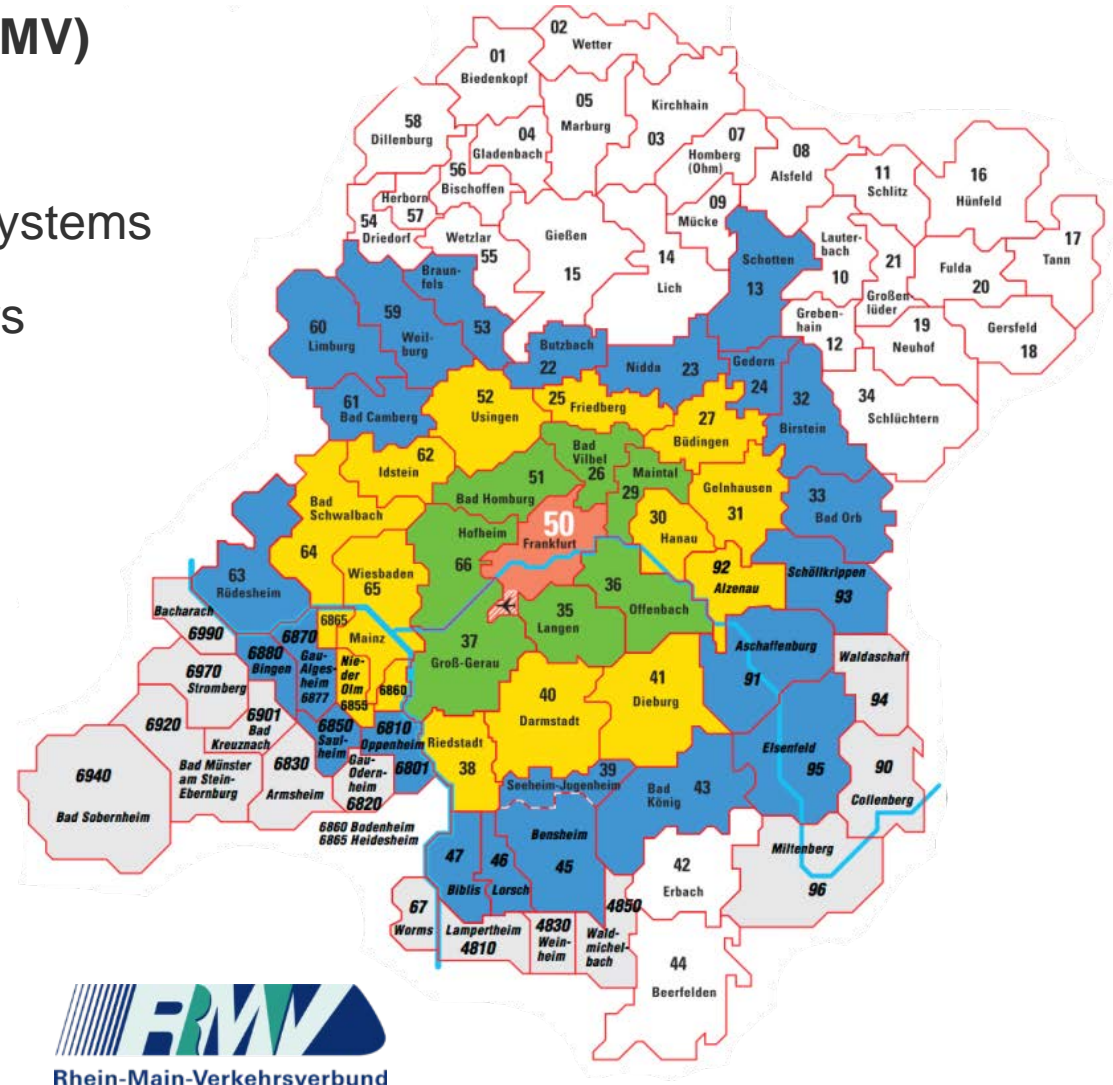


Example: Frankfurt



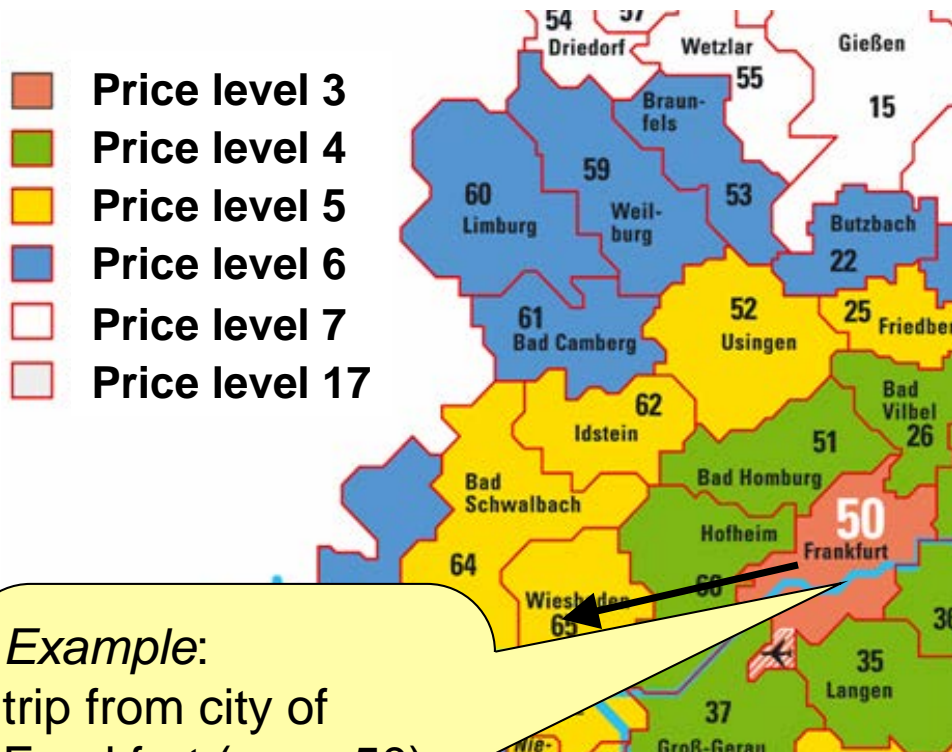
Rhine-Main Transport Alliance (RMV)

- Started in 1995
- Integration of 112 different fare systems
- Managing 153 transport operators
- Board includes
 - 15 rural districts
 - 4 large cities (e.g. Frankfurt)
 - 7 medium-sized towns
 - Provincial government (Hessen)
- Tendering rail services
- Joint marketing
- Integrated timetable/interchange



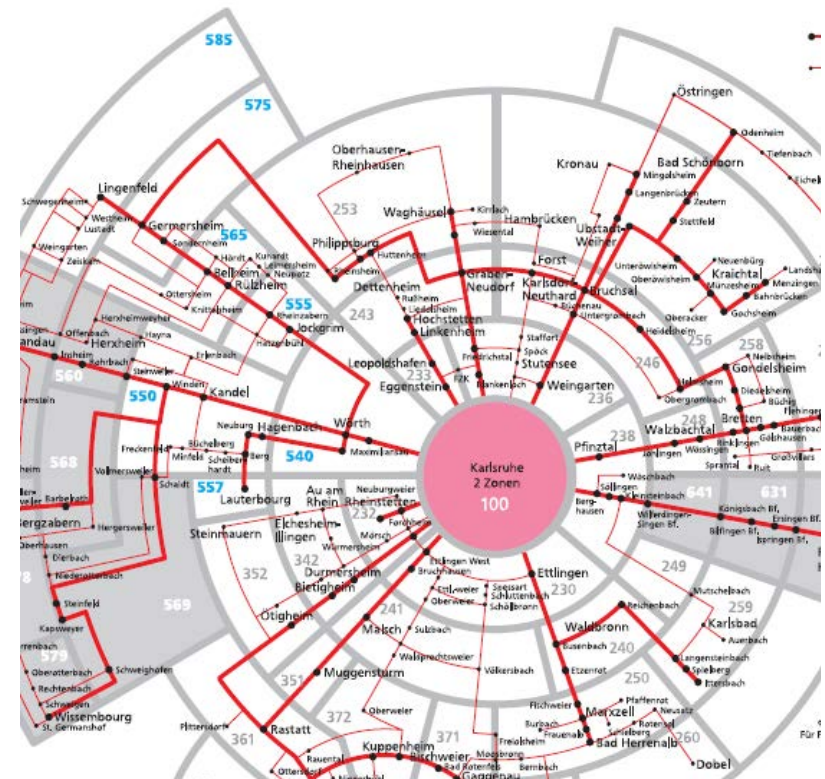
Zone Presentation (Examples)

Area zone in the polytechnic area

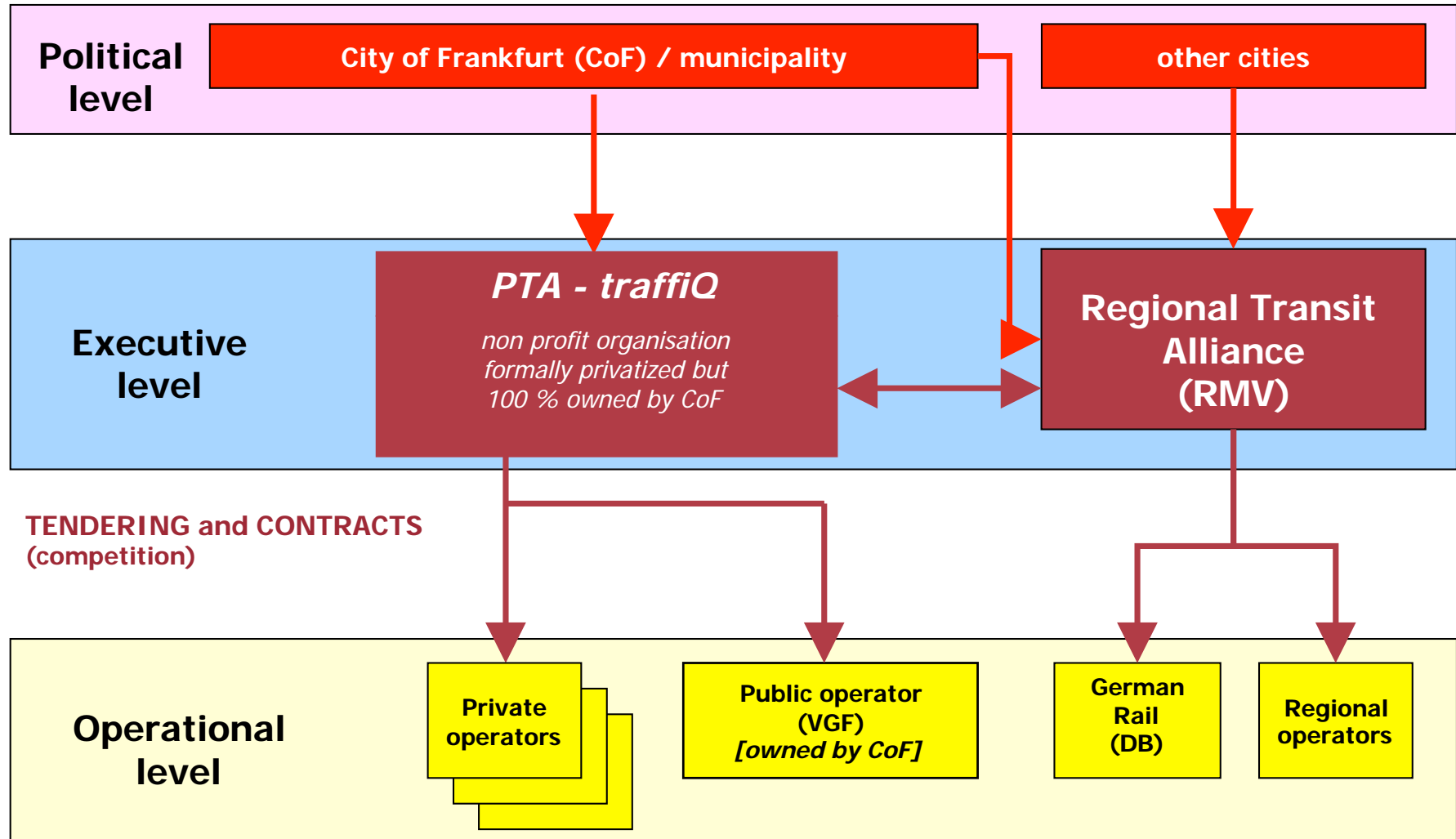


Example:
trip from city of Frankfurt (zone 50) to city of Wiesbaden (zone 65, yellow) = Price level 5

Ring zones in the monocentric area



3-level-organisation of public transport – the Frankfurt example within Rhine-Main Transit Alliance



* PTA = Public Transport Regulatory Authority



Main duties of a Transit Alliance (1)

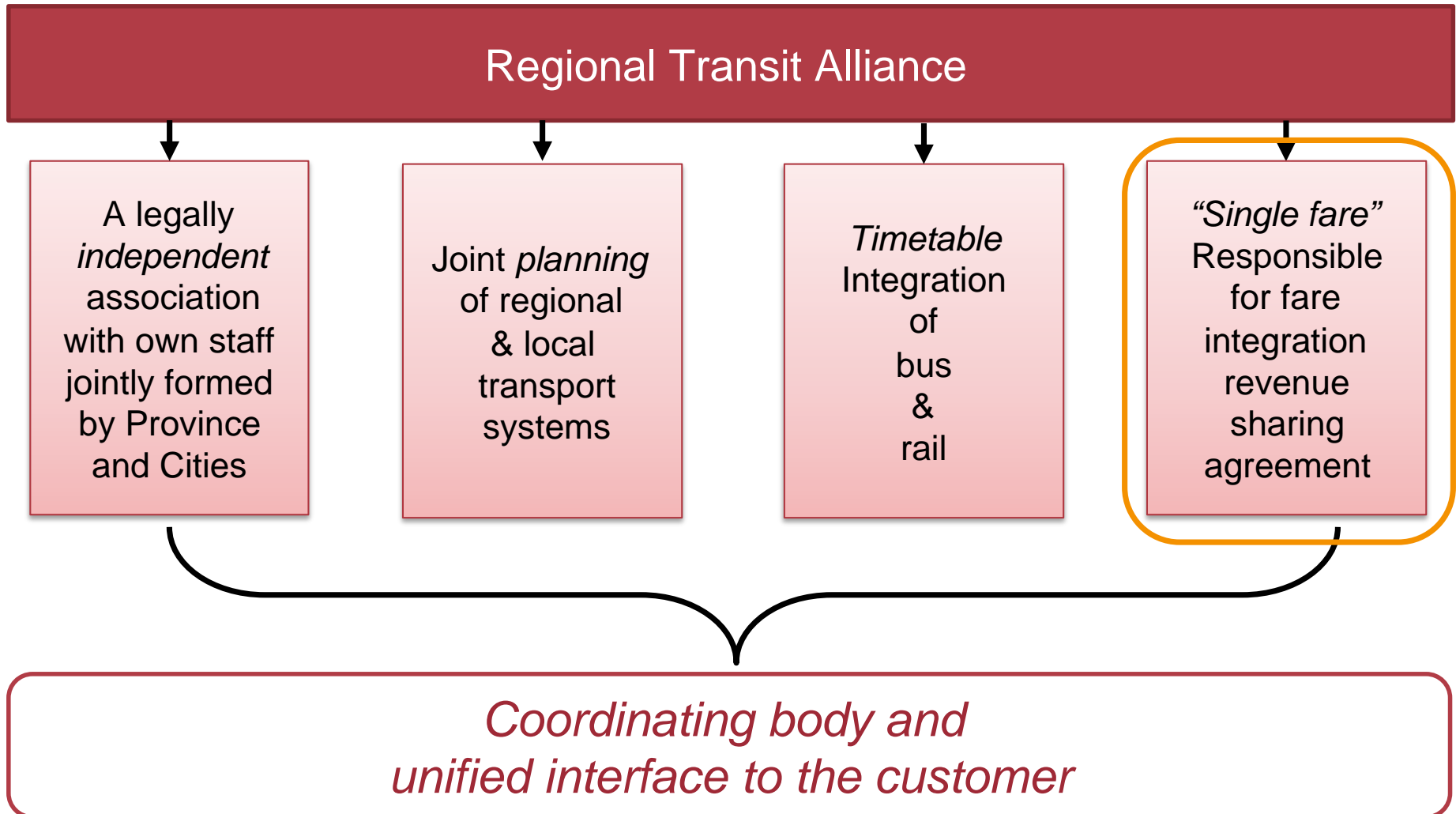
- ✓ Comprehensive **marketing** and **communication** across modes and operators
- ✓ Determining, establishing and adjusting the **common fare**
- ✓ Common **tickets** and **conditions** of **carriage**
- ✓ Distributing the **fare revenues** generated by common fare
- ✓ Creating framework rules for common **coorporate design, sales** and **distribution**



Main duties of a Transit Alliance (2)

- ✓ Coordinating of aligning & publishing **timetables**
- ✓ Providing **passenger information** about the alliance offer
- ✓ Measuring the **operational efficiency** and quality of service
- ✓ Preventing 'fare dodgers' ...

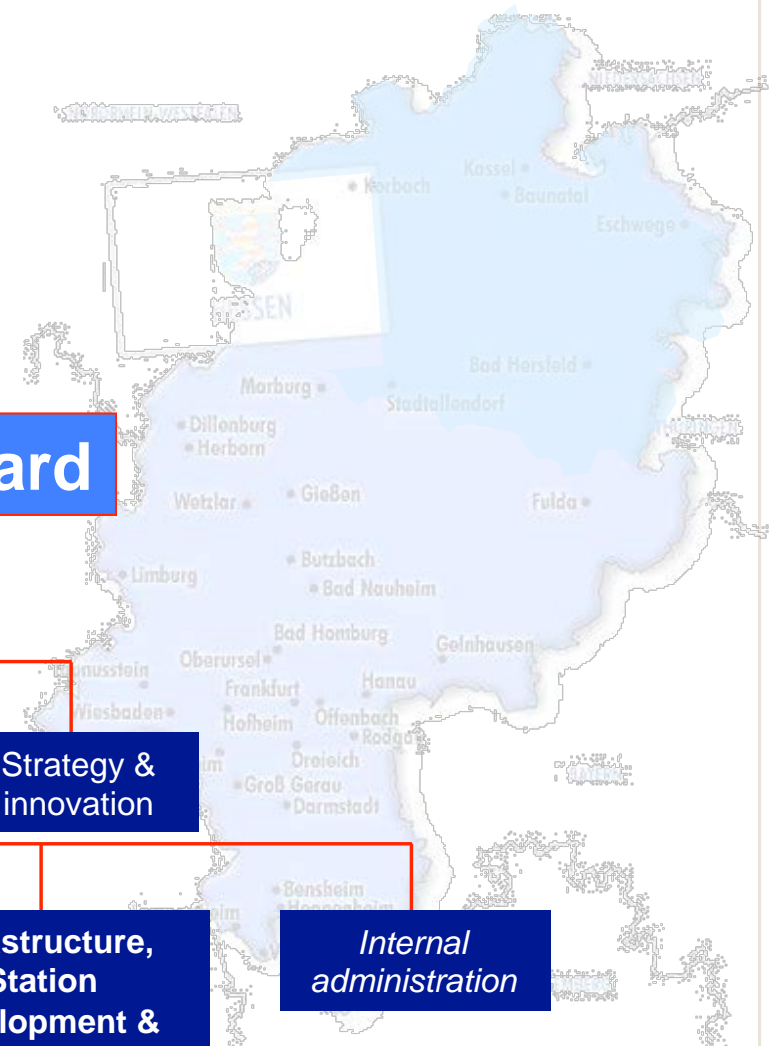
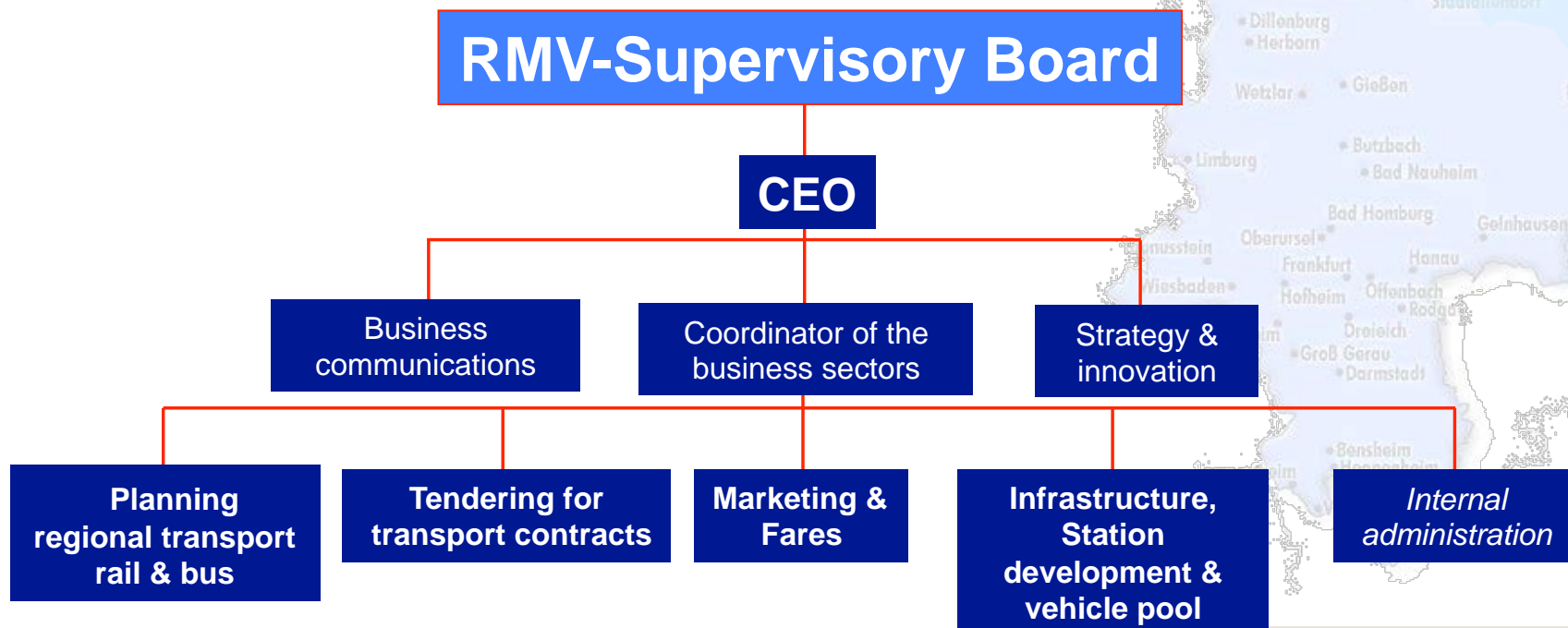
Features of Transit Alliances



*RSA = revenue sharing agreement

Regional Transit Alliance (RMV) - Organisation and Tasks

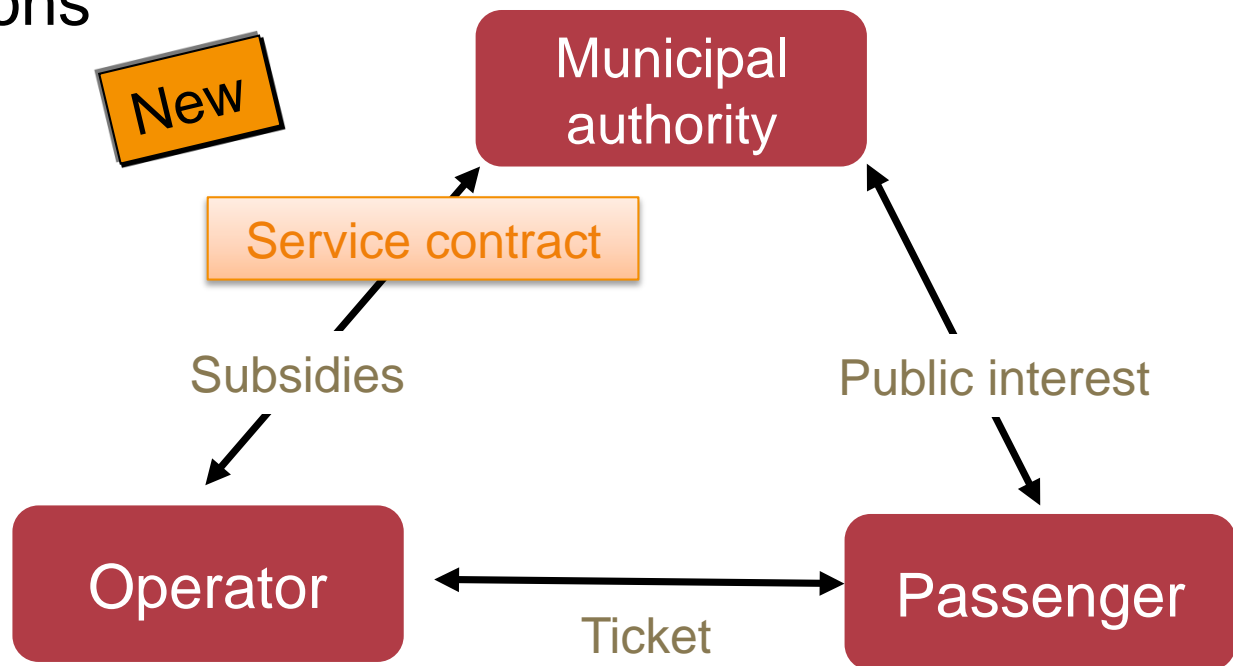
- The members in the RMV resolve - in the Supervisory Board - issues such as:
 - Fares
 - Regional performance oriented services
 - The business plan of the RMV



Service contracts for increased quality

Fundamental Content of Public Transport service contracts

- Duration of services, scope of services (including operating schedule, time schedules, routes)
- Compliance with all laws, standards and requirements
- Quality Requirements
- Gratifications and Penalties „Bonus-Malus System“
- Reporting obligations





Tender Areas for Buses in Frankfurt

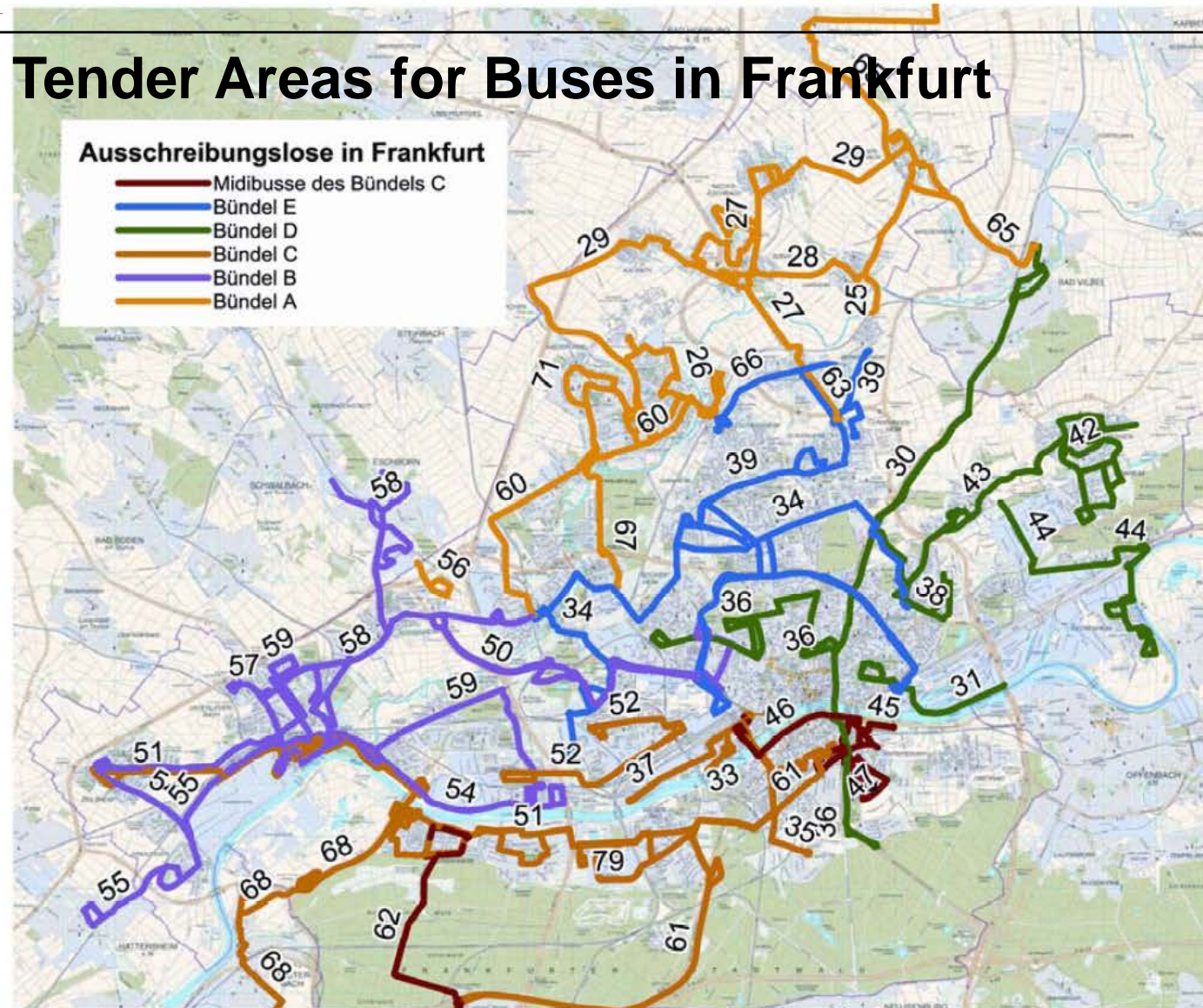


Abb. 5: Bündelaufteilung Frankfurt am Main

FRANKFURT

(600,000 inh.)

The 6 Bus Sectors to be tendered separately
(different colours).

Bus types used:

- ♦ Minibuses (line no. 25)
- ♦ Midi-Buses (line 61 in the south)
- ♦ Articulated buses (line 30,37,55,79)
- ♦ Standard buses (all other lines)

Volume of individual tender:

c. 50 buses and 3 million bus km for 6 years.

Cost savings and quality gains through tendering of bus operations

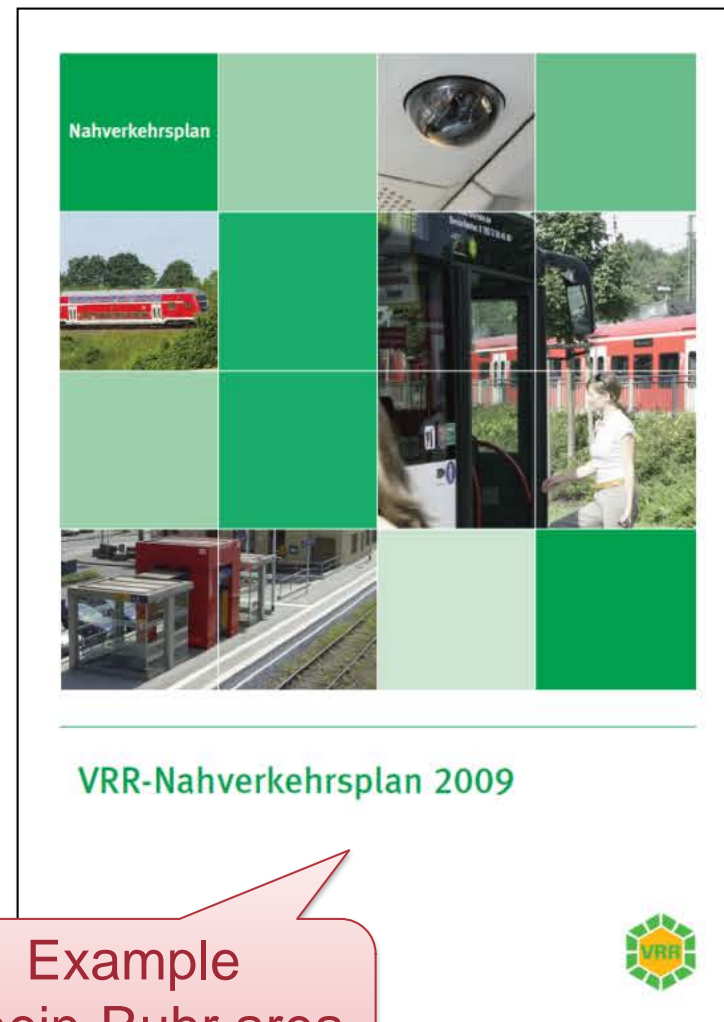
Example – Bus services in Frankfurt/Main

Responsible entity - Public Transport Regulatory Authority of the city of Frankfurt (traffiQ)

- **Service contracts for 5 lots of bus lines**
- Annually 2-3 Mio. VKT per lot
- **Bundling of profitable and less profitable lines**
- Private and municipal operators
- **Still one unified “brand”**
- **Increase in cost efficiency, per vkm costs reduced by aprox 25 %**
- **Increased service quality**

Regional Public Transport Plans

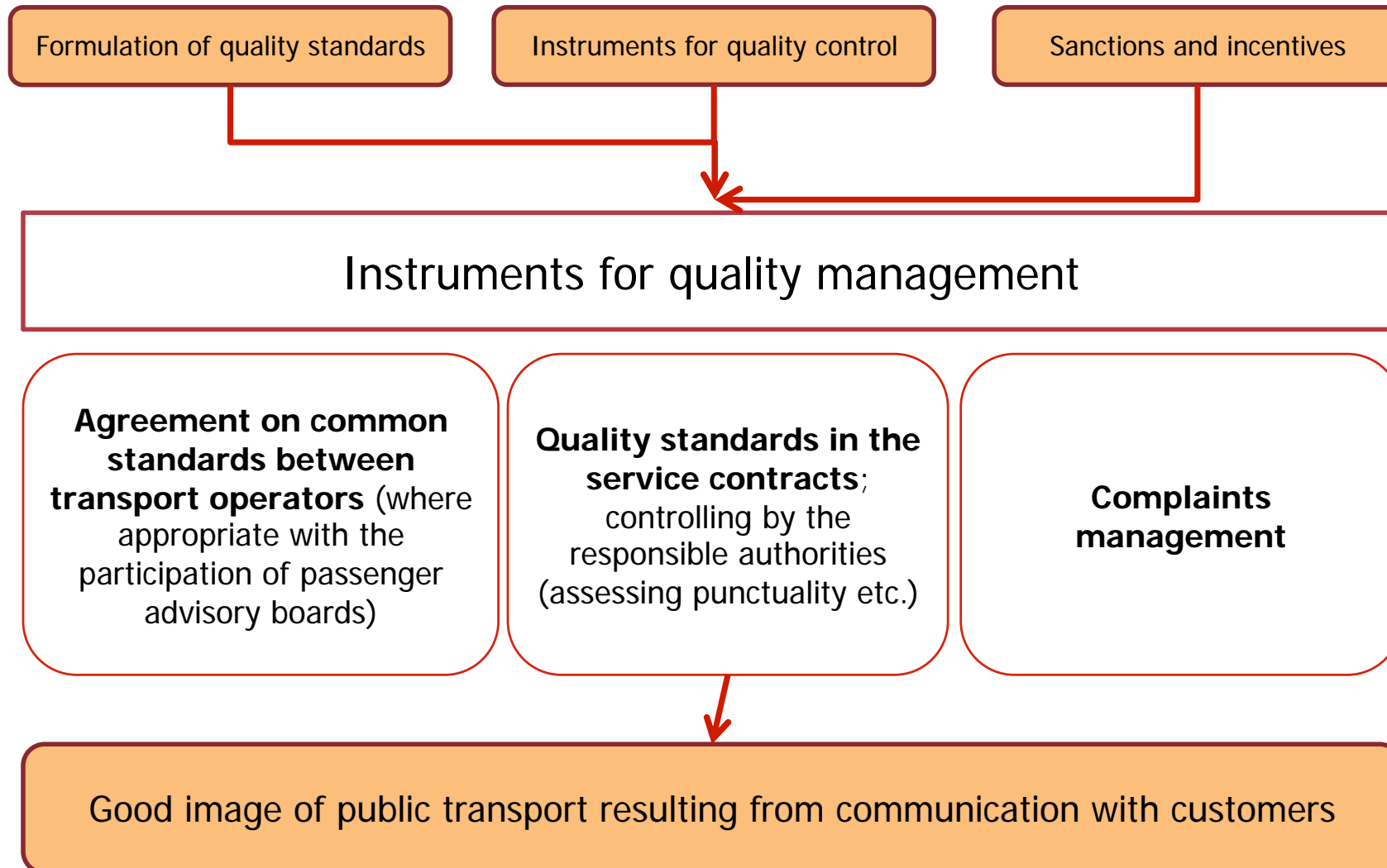
- 1. Frameworks Conditions**
- 2. Rail Based Public Transport**
 - Developments of Services
 - Future Development of Services (Short- term, Long-term Measures)
 - Infrastructure (Stations, Network)
- 3. Intermodal Mobility**
 - Passenger Information
 - Accessibility
 - Interconnectivity with public transport, with Individual transport
- 4. Safety and Customer Management**
- 5. Tariff and Marketing**
- 6. Financing**



Example
Rhein-Ruhr area
8 mil inhabitants



Customer-oriented Quality Management





The example of **Copenhagen** - Customer satisfaction as a basis for a bonus-malus scheme

- Clean exterior, condition of bus
- Cleanliness inside the bus
- Condition of interior furnishings of bus
- Temperature
- Air conditioning
- Limiting noise and vibration
- Adherence to schedules, punctuality
- Style of driving
- Driver's conduct towards passengers
- General appearance and behaviour of driver



Summary and steps forward





Steps for preparation of a smart, integrated public transport system

- ✓ Develop the PT system strictly around customer requirements
- ✓ Integrate on all levels, be it physical, time table, tariffs...step by step integration
- ✓ Good integration with NMT
- ✓ Integrated regional urban transport planning bodies
- ✓ Regional Public Transit Authority, providing required regulatory functions
- ✓ One face to the customer, integrated marketing and sales
- ✓ Setting service and quality standards, integrated quality management system

3 Leverage Points to Move Ahead

1

Combination of national – provincial - local sustainable funding mechanisms

- Profit adequate public funding, mobilise additional funding through economic instruments like energy taxes (oil), land-value taxes etc.
- Increase quality and efficiency of public transport services through tendering and integrated planning
- Strengthen fare base with tailor-cut fare offers for different user groups

2

Comprehensive mobility planning

- Develop comprehensive mobility plans (e.g. local public transport plan)
- Provide capacity building and performance monitoring

3

Coordinate responsibilities

- Great potential of transit alliances for regionally integrated transport services
- Unify responsibilities under alliance enterprises or put authorities



GIZ Sourcebook on Sustainable Urban Transport



- addresses the key areas of sustainable transport policy framework for developing cities
- consists of over 30 modules and training packages
- intended for policy-makers and their advisors

GIZ Transport Publications



- Technical documents, case studies
- training material
- Factsheets
- Handbooks / Manuals

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Division 44
Water, Energy, Transport



Transport Alliances

Promoting Cooperation and Integration
to offer a more attractive and efficient Public Transport
Sustainable Urban Transport Technical Document # 4

Transport Alliances - Promoting Cooperation and Integration to offer a more attractive and efficient Public Transport

www.sutp.org





BMZ  Federal Ministry
for Economic Cooperation
and Development

 **Future-Makers,**
Building the future,
Let's join forces.

Transit Alliances

Towards Fully Integrated Public Transport

CONFERENCE EDITION



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on making Sustainable
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your city!**

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