

# Public Transport in Germany

## **Organisation, Regulation and Financing**



### **Transport and Climate Change Week 2017**

20. September 2017, Berlin

Marc Gorter (KCW) & Dr. Friedemann Kunst

# Introduction

## A brief introduction of ourselves



### **Marc Gorter**

- Ir. Philosophy of Science, Technology and Society
- Consultant
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### **The company: KCW GmbH**

- Strategic and management advice for public transport authorities
- Website: <http://www.kcw-online.de/eng>



### **Dr. Friedemann Kunst**

- Dipl.-Ing. Urban and Regional Planning
- Adviser
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# Agenda

## **Organisation, Regulation and Financing**

### **1. Overview (Public) Transport Markets in Germany**

2. Regulation of PT Markets
3. Costs and Financing of PT
4. PT Organisation and Institutions
5. PT Planning Instruments and Processes
6. Tendering, Contracting and Controlling
7. (Current Developments in the Transport and PT Market)

# Overview Transport and PT Markets in Germany

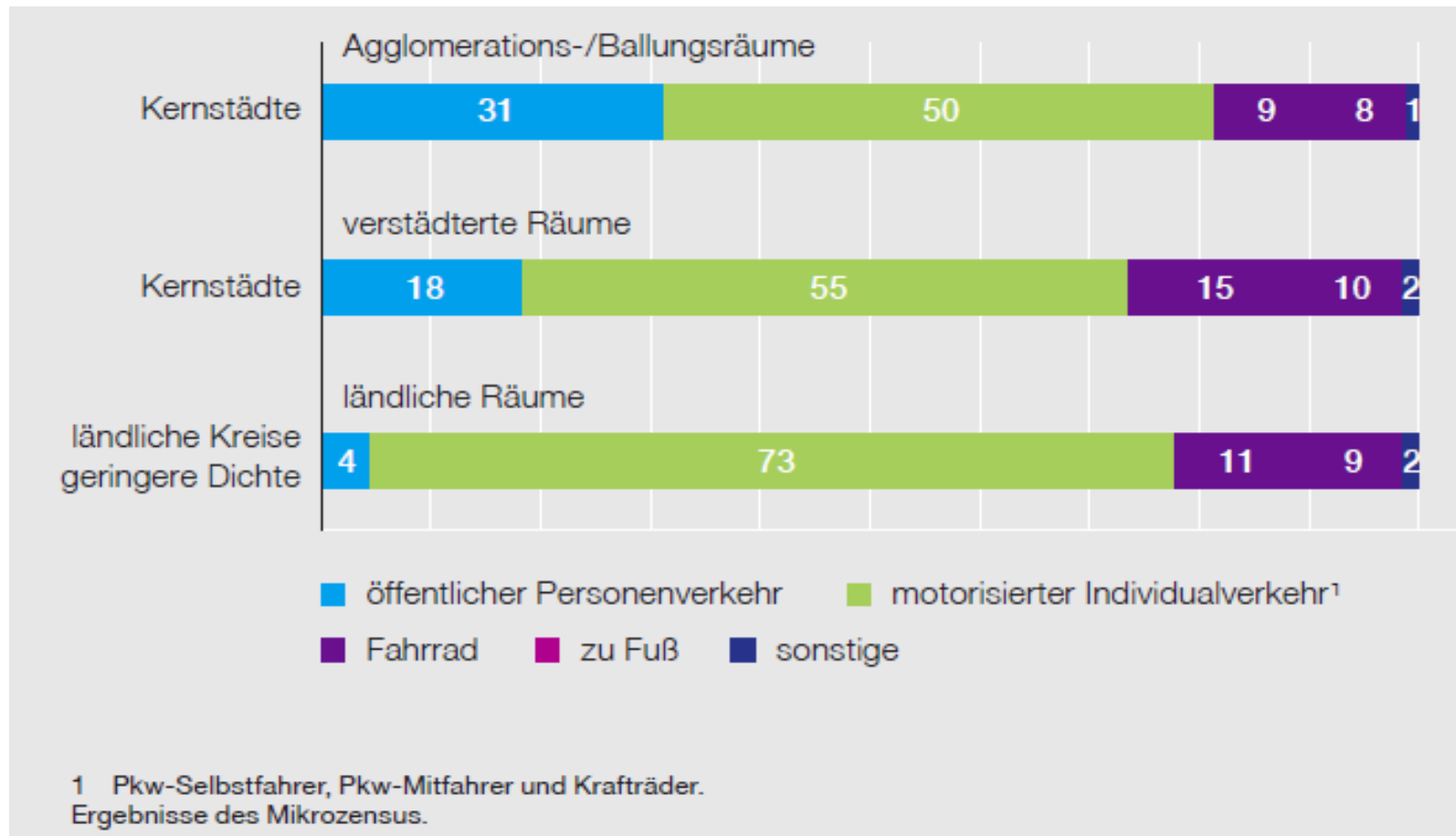
## Long distance and local PT





# Overview Transport and PT Markets in Germany

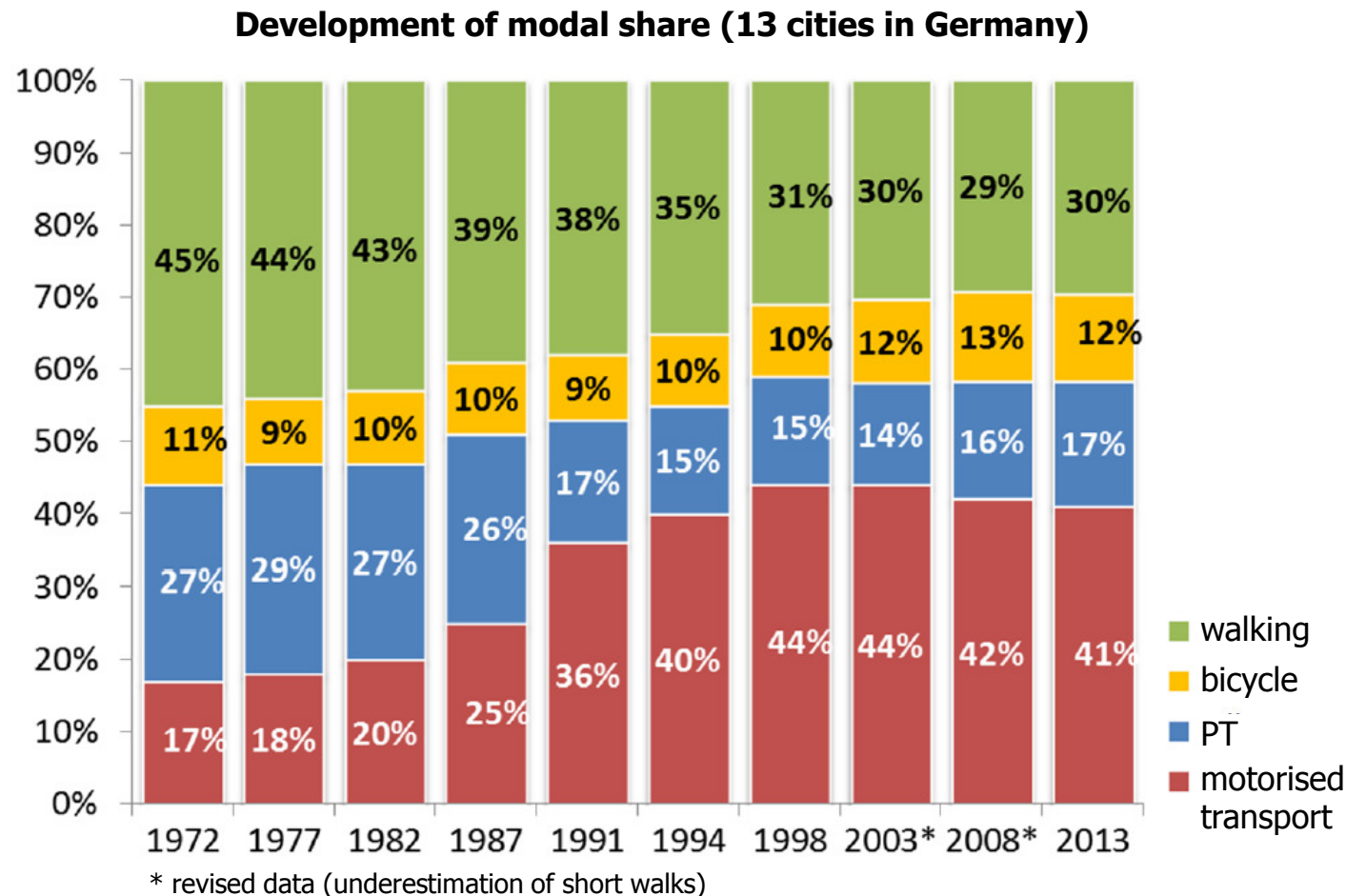
## Modal split Germany commuters 2012



Source: Weert Canzler, WZB, Räumliche Mobilität und regionale Unterschiede, Datenreport 2016, DL 14.9.2017 from [https://www.destatis.de/DE/Publikationen/Datenreport/Downloads/Datenreport2016Kap11.pdf?\\_\\_blob=publicationFile](https://www.destatis.de/DE/Publikationen/Datenreport/Downloads/Datenreport2016Kap11.pdf?__blob=publicationFile)

# Overview Transport and PT Markets in Germany

## Modal split – history



**Source:** Gerd-Axel Ahrens, Die Stunde der Wahrheit Präsentation und Diskussion der Ergebnisse des SrV 2013  
<https://tu-dresden.de/bu/verkehr/ivs/srv/srv-2013/abschlusskonferenz-november-2014>

# Overview Transport and PT Markets in Germany

## Local/regional and long distance transport

|             |  |  |   |
|-------------|--|--|---|
|             | <b>PT ('Öffentlicher Verkehr')</b><br>= scheduled, generally accessible transport services |  |   |
|             | <b>Local PT</b><br><br>average travel time < 1 hour<br>average travel distance < 50 kms    | <b>Long-distance PT</b><br><br>average travel time > 1 hour<br>average travel distance > 50 kms                            |   |
| <b>Laws</b> | General Railways Act<br><i>Allgemeines Eisenbahngesetz (AEG)</i>                           | <b>'rail-bound' local PT</b><br>( <i>'Schienenpersonennahverkehr'</i> )<br>= Regional and local rail                       | <b>rail services</b><br>( <i>'Schienenpersonenfernverkehr'</i> )<br>= Long distance trains                              |
|             | Passenger Transportation Act<br><i>Personenbeförderungsgesetz (PBefG)</i>                  | <b>'road-bound' local PT</b><br>( <i>'Öffentlicher Straßenpersonennahverkehr'</i> )<br>= Bus, metro, tram (taxi and other) | <b>'road-bound' long distance services</b><br>( <i>'Öffentlicher Straßenpersonenfernverkehr'</i> )<br>= Express coaches |
|             | Other  | ferry, cable, ...  | air transport, ...  |

# Overview Transport and PT Markets in Germany

## Long distance PT

commercial services

### Long-distance passenger trains

in principle free market; in practice Deutsche Bahn holds (nearly) 100% market share



### Long-distance coach services

Formerly strictly regulated, market liberalisation since 2013 (but no authorisation of services directly parallel to long-distance trains); strong concentration during the last few years, main operator now FlixBus





# Overview Transport and PT Markets in Germany

## Local/regional PT

non-commercial services

### Short distance heavy rail

Suburban rail ("S-Bahn") usually directly awarded

Regional rail contracts increasingly awarded by public procurement

### Light rail and road

Rail-bound and city services usually directly awarded

Regional (and small city) bus contracts increasingly awarded by public procurement



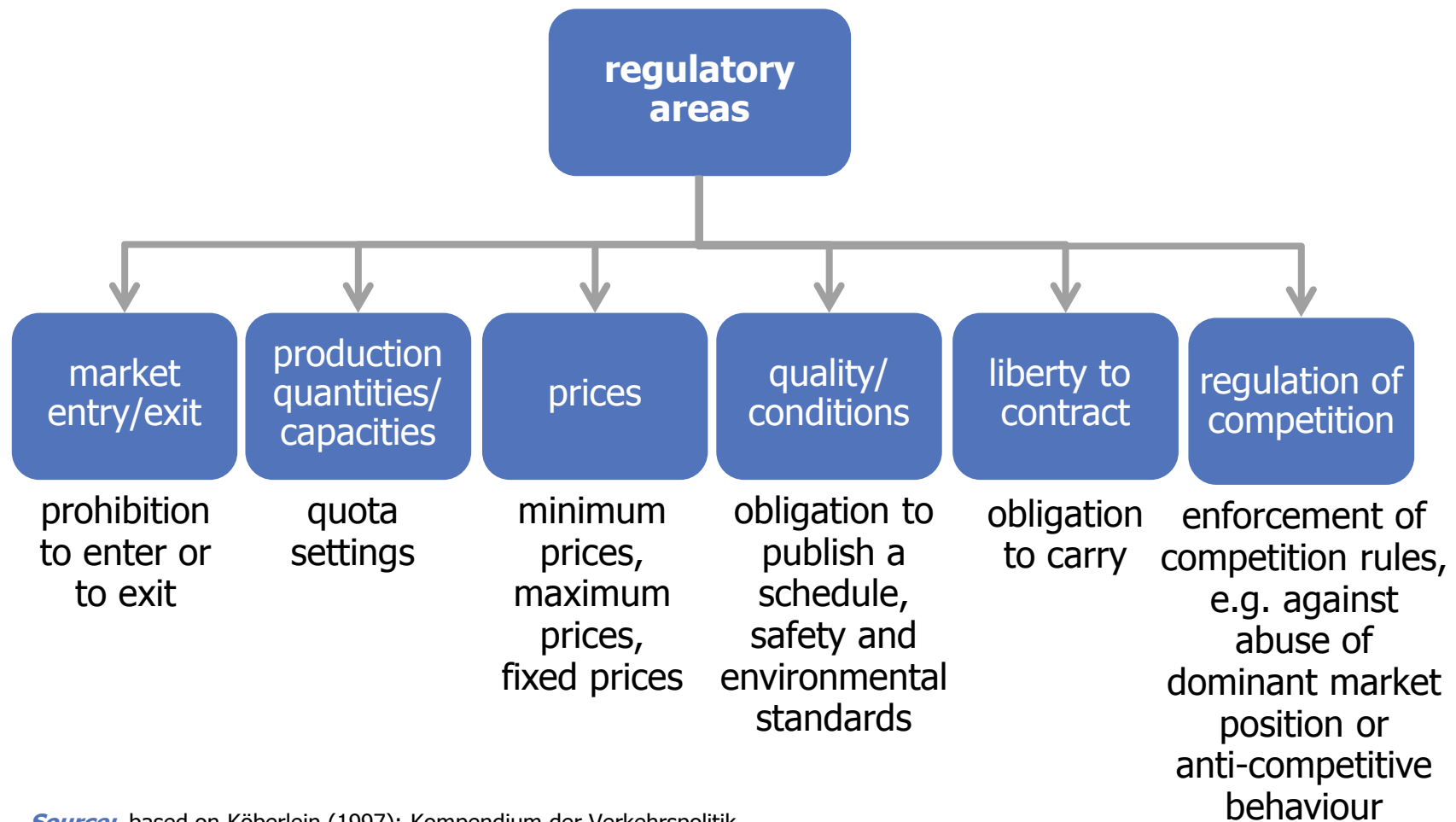
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## **Organisation, Regulation and Financing**

1. Overview Transport and PT Markets in Germany
- 2. Regulation of the PT Sector**
3. Costs and Financing of PT
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# Regulation of the PT sector

## Possible regulatory areas



*Source:* based on Köberlein (1997): Kompendium der Verkehrspolitik

# Regulation of the PT sector

## Market failures in PT – mainly rail infrastructure

### Typical reasons for market failures:

1. Natural monopolies
2. Cut-throat competition
3. Externalities (environment, congestion and accidents)
4. Public goods



*johncatral@ flickr - CC BY –NC-ND 2.0*



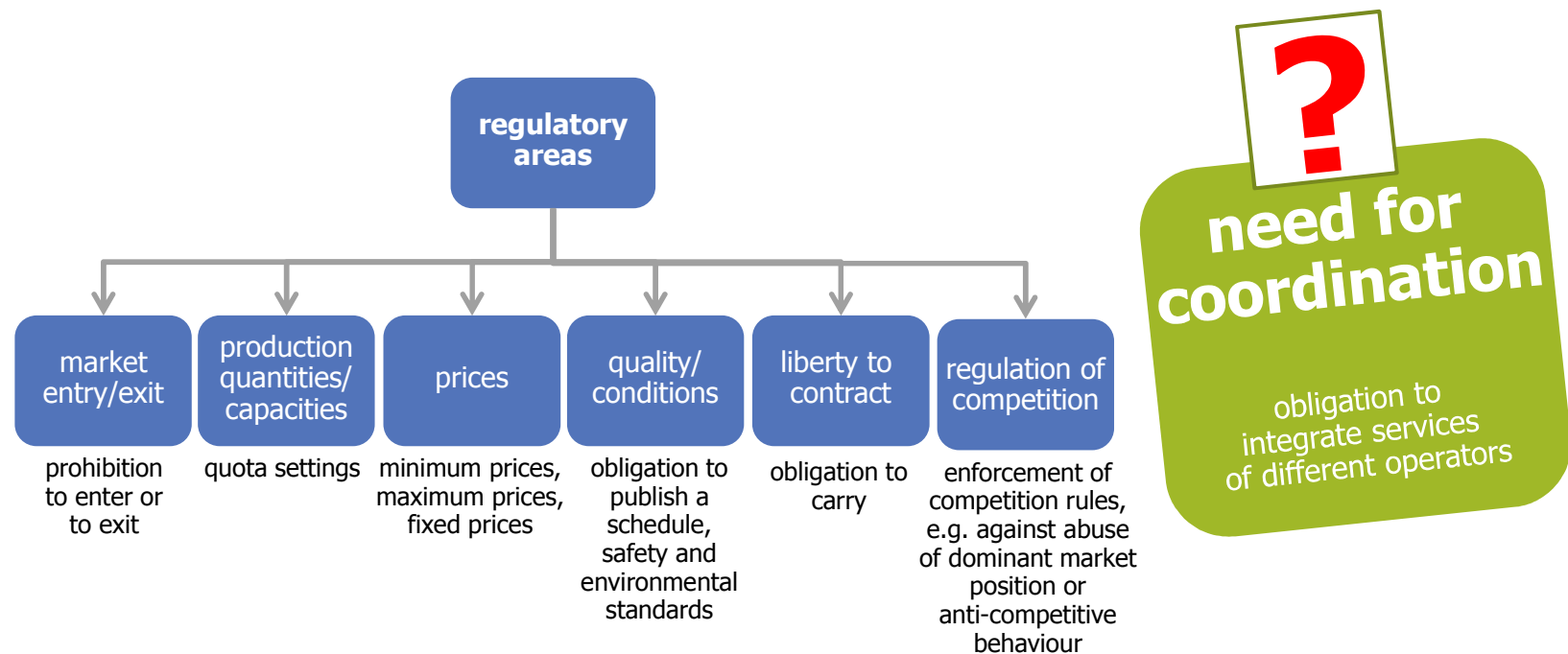
**There are no indications of substantial market failures regarding the production conditions of bus systems**



**Where PT requires specific infrastructure, market failure may occur on infrastructure level due to the occurrence of natural monopolies**

# Regulation of the PT sector

## Possible regulatory areas – a LPT specific issue: Coordination



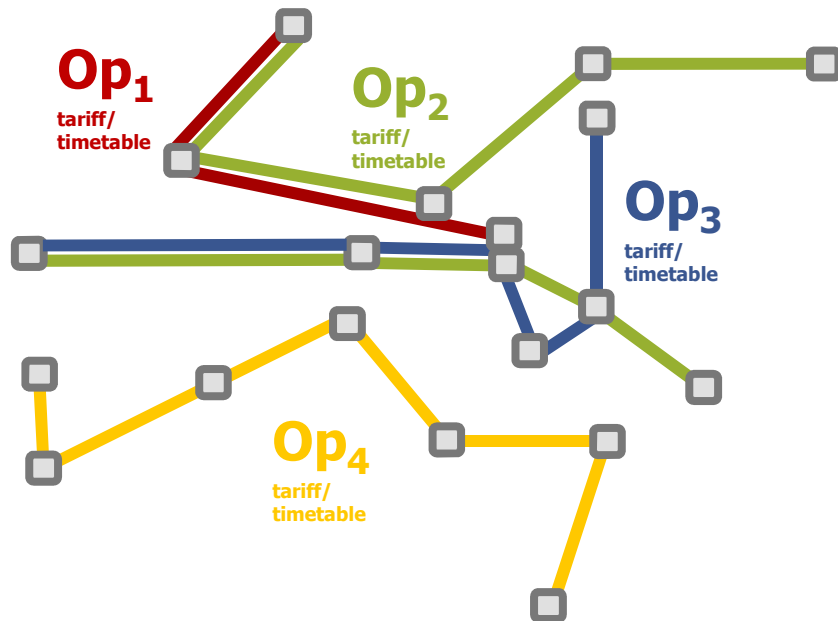
*Source:* based on Köberlein (1997): Kompendium der Verkehrspolitik



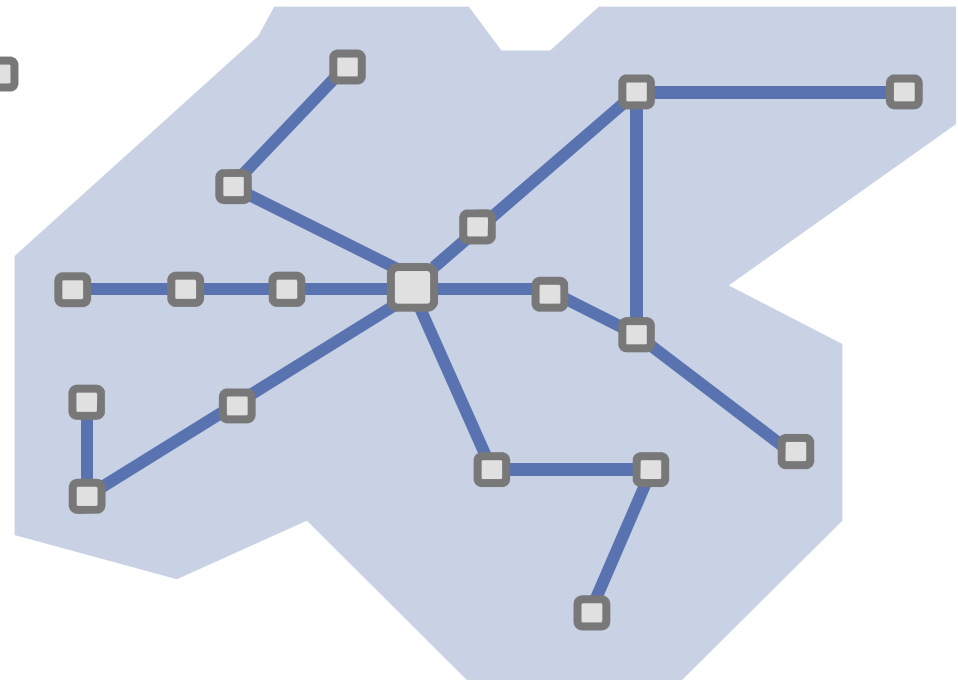
# Regulation of the PT sector

## Why coordination of local PT?

### Segregated PT

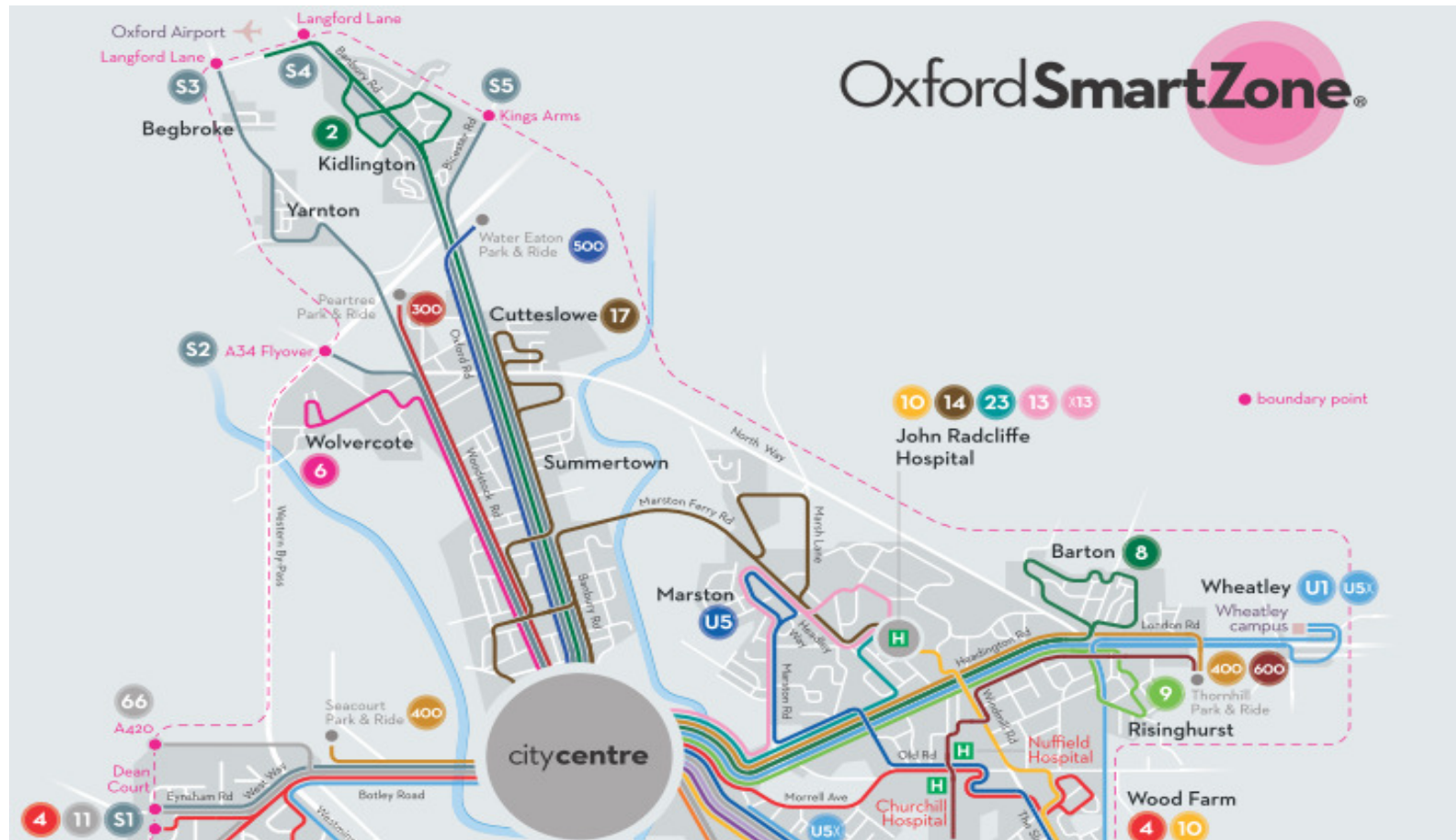


### Integrated PT: one tariff/timetable



## Regulation of the PT sector

# Coordinated fares & timetables based on a voluntary partnership in a commercial market



Source: <http://www.oxfordshire.gov.uk/cms/>

# Regulation of the PT sector

## Coordination – Summary

- Lack of PT coordination might lead to **negative effects on welfare:**
  - no network benefits
  - high transaction costs for users
  - uncertain schedules
  - dysfunctional competitive behaviour
- Voluntary coordination seldom; risk of **anti-competitive collusion**
- **'Classical solution'** to the coordination problem: state monopoly (public undertaking) → often production inefficiencies
- **Other solutions** to the coordination problem:
  - mandatory contractual provisions for integrated services
  - open-access regulatory solutions (e.g. general rules)
  - informal and negotiated forms of coordination; widespread in reality
- **Drawbacks:** (Serious) problems with revenue allocation (tariff); level of integration might exceed needs and can be (too) costly; highly coordinated PT may hinder additional custom-made services ...

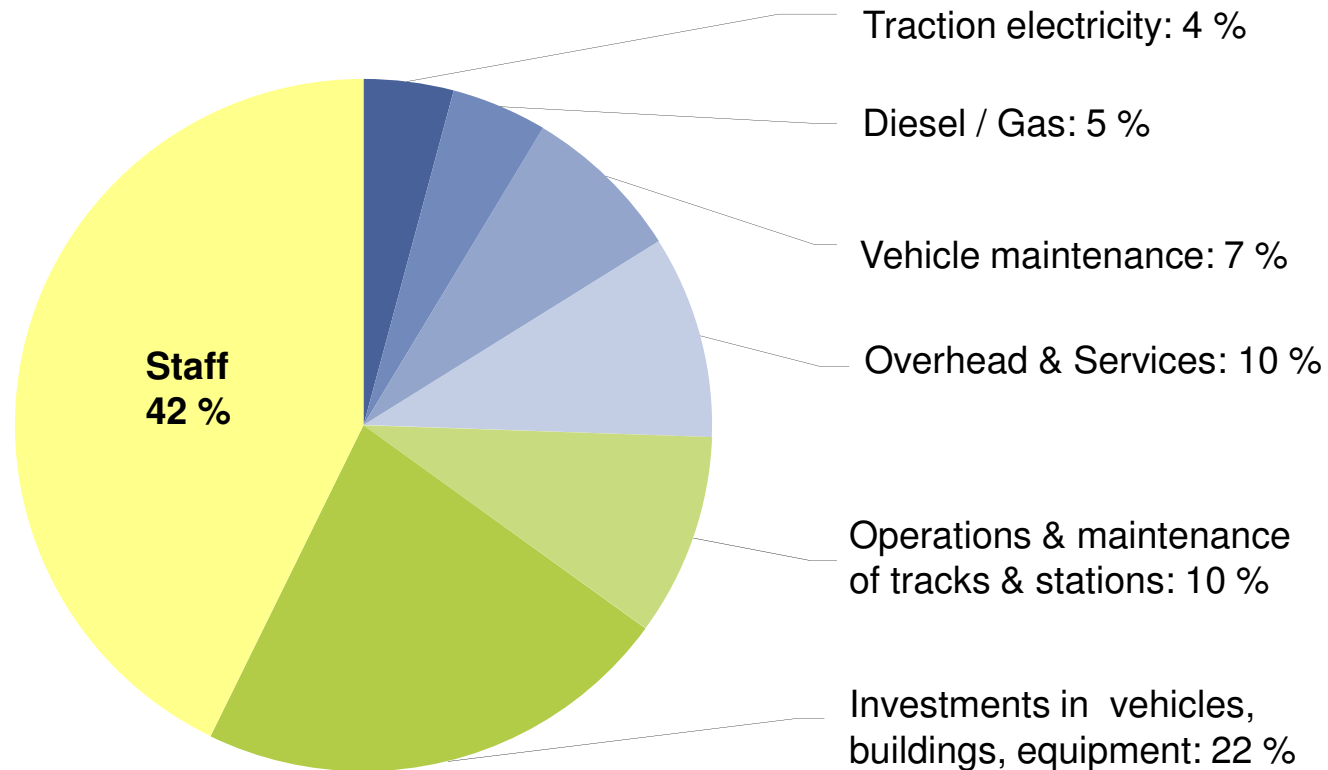
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## **Organisation, Regulation and Financing**

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## Costs and Financing of PT

### Cost split up



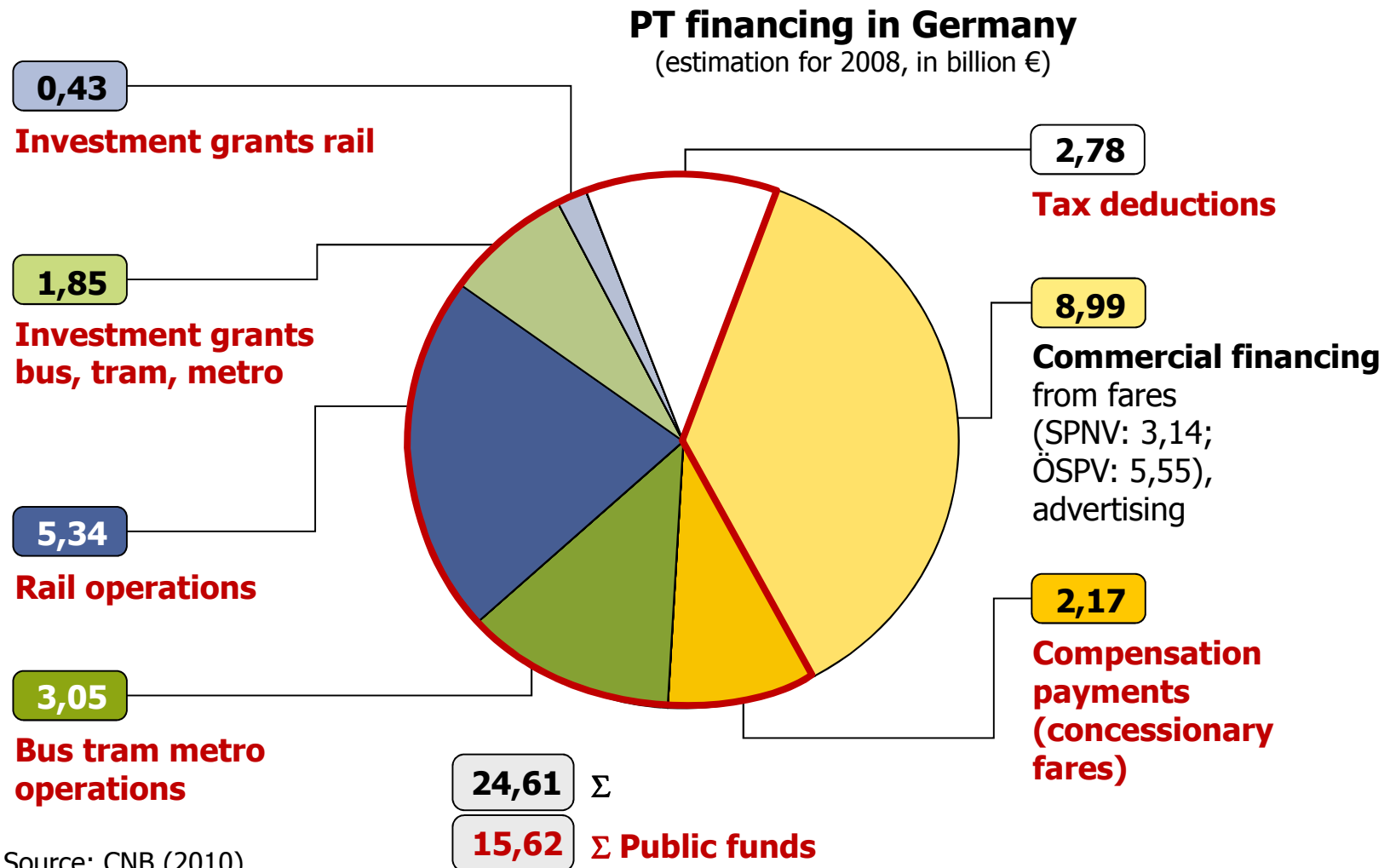
\* Source: VDV (Ed.) 2009: p. 59; Calculation without depreciation and interest.

**Personnel costs are the dominant share in the PT cost structure; the percentage varies considerably across modes, countries**



# Costs and Financing of PT

## Financing sources



Source: CNB (2010)

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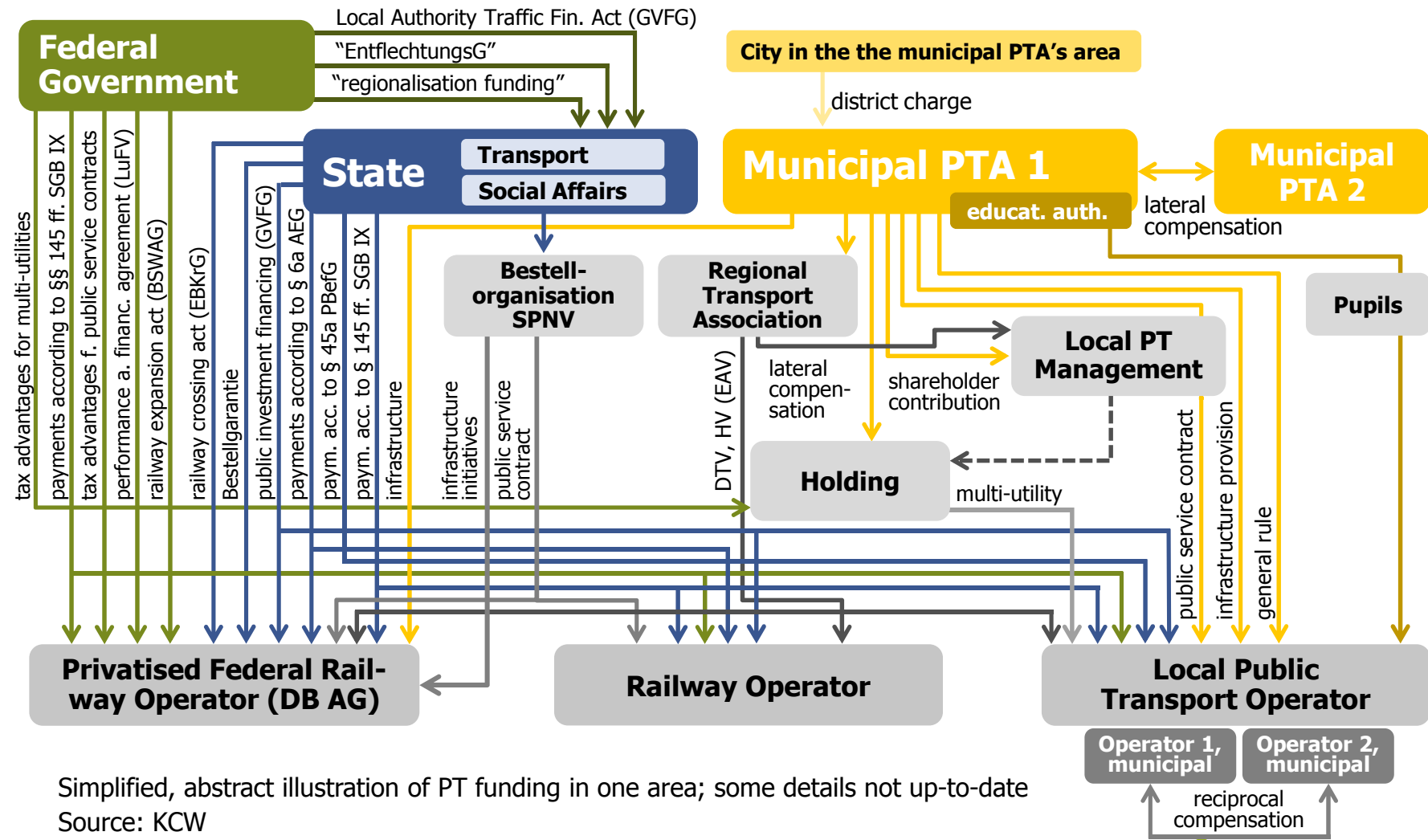
**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

Dr. Friede-  
mann Kunst

**kcw**

# Costs and Financing of PT

## Financing practice in Germany (traditional)



Simplified, abstract illustration of PT funding in one area; some details not up-to-date

Source: KCW

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# Costs and Financing of PT

## Infrastructure investments and maintenance

### New infrastructure

Due to a lack of funds, to largely complete PT-networks and to complicated and time-consuming planning processes, only little investments in new infrastructure in larger cities take place

### Existing infrastructure (most networks built decades ago)

- In many smaller cities with declining population a **political debate** is going on, whether infrastructure has to be dismantled (in particular regarding tram services in cities with less than 100,000 inhabitants),
- in all cities focus is laid on an **intensified maintenance** of the infrastructure.

## Costs and Financing of PT

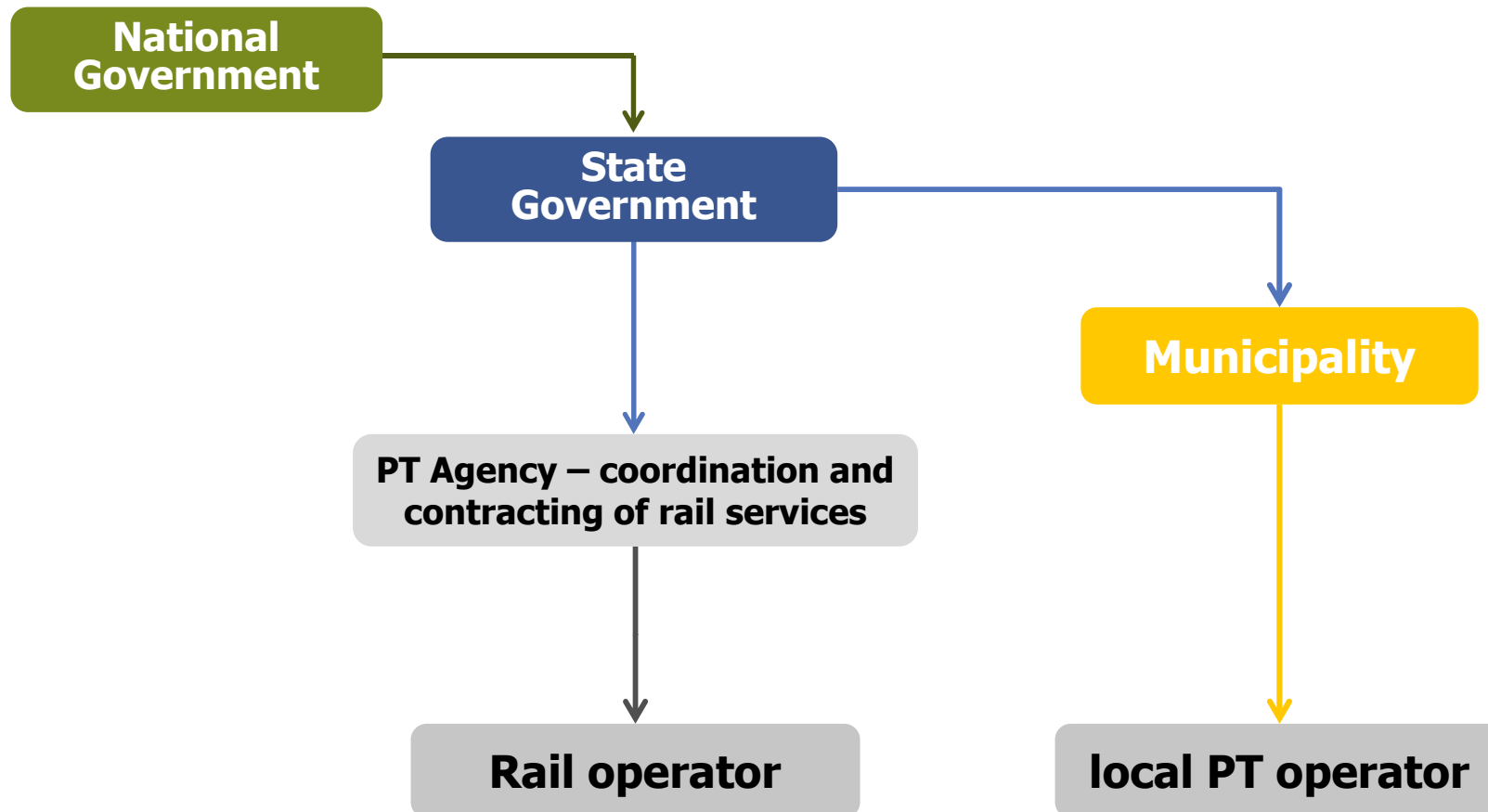
### **Criticism and new approaches**

**All in all, public transport financing in Germany is characterized by:**

- a complex system of different financial sources and instruments, earmarked funds and responsibilities of several stakeholders.
- The complexity, lack of transparency and possibilities of inefficiencies and windfall gains are debated and criticized continuously.
- Some federal states implemented finance reforms in the recent past, to rearrange and simplify their financing structures.

# Costs and Financing of PT

## **Simpler, more transparent future PT financing?**





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## PT Organisation and Institutions

### **Federal states are responsible authorities for local PT**

- Federal states are responsible for financing and organising public transport.
- All states – with exception of the three city states of Bremen, Hamburg and Berlin – delegate responsibility further to urban and rural districts.
- Districts can cooperate or can delegate responsibility to a joint institution.



# PT Organisation and Institutions

## Three-layer model

Practice: great variety in organisational forms & task allocations between actors on the 3 levels!

### Aims for public transport

'Strategic Level'  
(long term,  
5 years +)

#### Definition of goals:

Transport policy, market share, profitability/public transport budget

#### General definition of the services:

Area, target groups, products, intermodality

**Authority**  
(state, city)

### Planning and design

'Tactical Level'  
(medium term,  
1 to 3 years)

#### Definition of detailed service characteristics:

Fares, personnel skills, image & additional services, vehicles, routes, timetable etc.

**PT bureau,  
PT Alliance**

### Operation

'Operational Level'  
(short term,  
day to day)

#### Execution of the PT services:

Sales activities, information to the public, infrastructure management, vehicle rostering, personnel rostering & management, cost controlling etc.

Contract  
... ..

**Operator**  
(rail, bus, ...)

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non-comprehensive;  
some examples

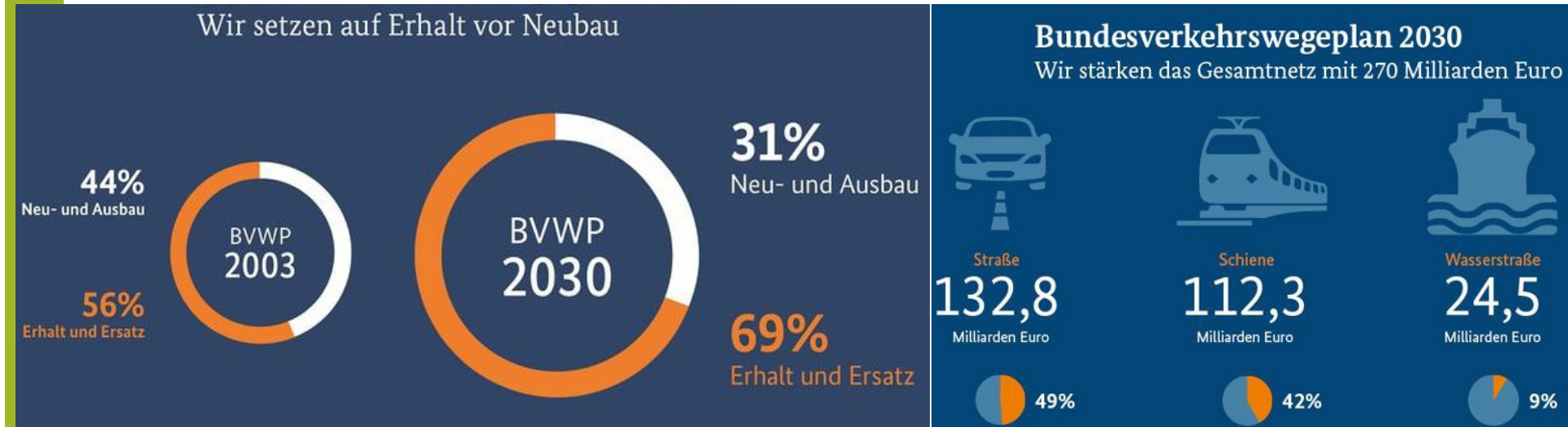
# PT Planning Instruments and Processes

## Bundesverkehrswegeplan („BVWP“)

- Main plan for federal roads, rail-, waterways
- 10-15 years, current BVWP 2030
- Cost-Benefit-Analysis
- Ecological/environmental, spatial/urban development analysis



**Priorisation**

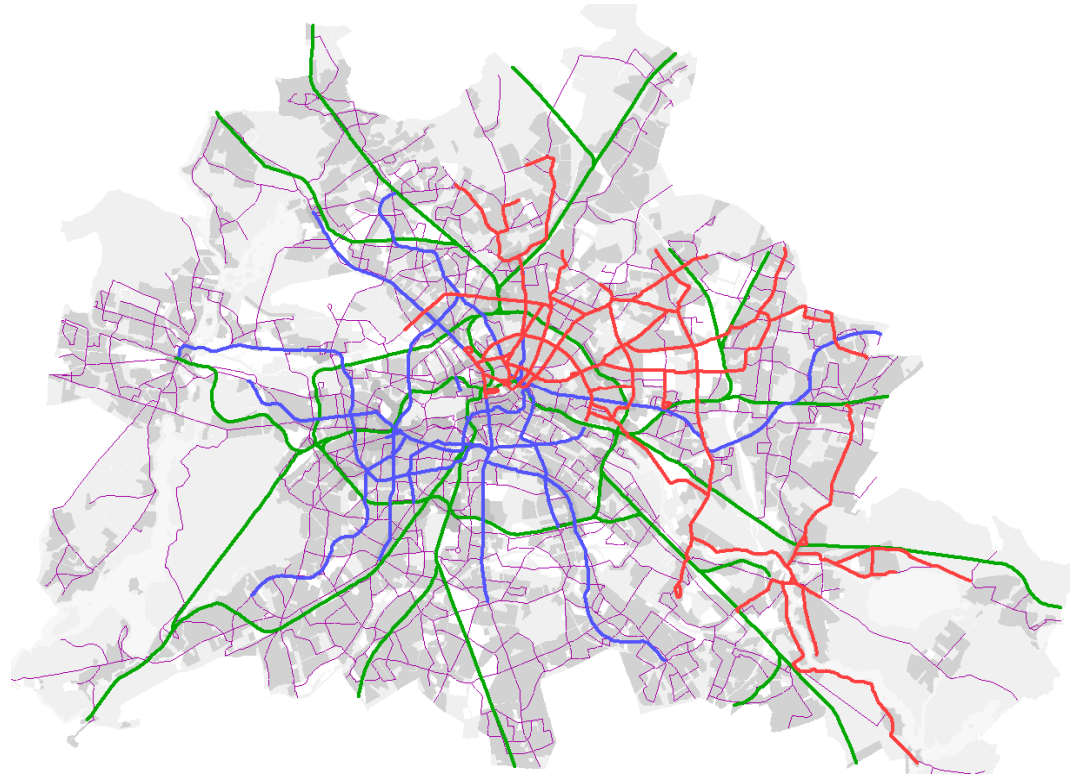




# PT Planning Instruments and Processes

## Local Public Transport Plan („NVP“)

- Main instrument for PT planning by PTA
- 5 year cycle
- Definition of concrete PT standards regarding area coverage, frequencies, infrastructure etc.
- Binding: PTA & concession authority (separate entity) can reject commercial transport below service level as defined in NVP



# PT Planning Instruments and Processes

## New infrastructure: Standardised cost-benefit-analysis

Obligatory for infrastructure subsidy

Economic benefits-costs-ratio >1

Evaluation on overall society level

- travel times PT and other traffic
- costs PT and car ownership
- emissions
- accidents
- ...

Picture: example „Standardisierte Bewertung“ rail project „Stadt-Umland-Bahn“ Erlangen

STADT ERLANGEN – Stadt-Umland-Bahn (StUB)

### Standardisierte Bewertung

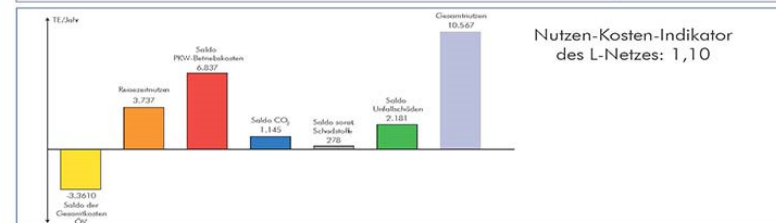
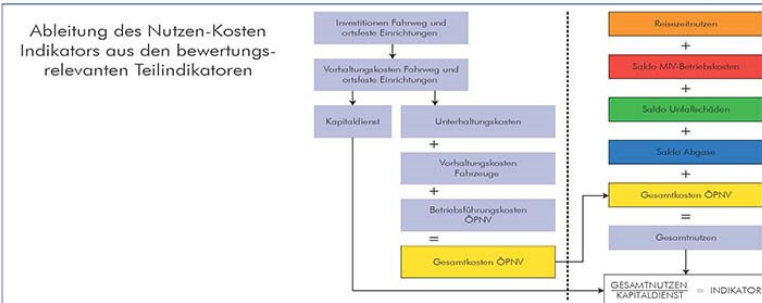
#### Zielsetzung:

Mit der Standardisierte Bewertung wird ermittelt, ob ein Vorhaben gesamtwirtschaftlich sinnvoll ist. Erst unter dieser Voraussetzung ist es zulässig, Fördermittel nach dem Gemeindeverkehrsfinanzierungsgesetz (GVFG) einzusetzen.



#### StUB-L-Netz-Teilstreckenbelastung

| Linie<br>Nr. | Verlauf<br>Abschnitt                           | Anzahl Fahrten pro Tag |    |
|--------------|--|------------------------|----|
|              |  | WTS                    | So |
| 4.1          | Herzogsdorferhof –<br>Büchenbach –<br>Erlangen | 52                     | 30 |
| 4.2          | Büchenbach West –<br>Erlangen                  | 52                     | 30 |



# PT Planning Instruments and Processes

## Citizen Participation

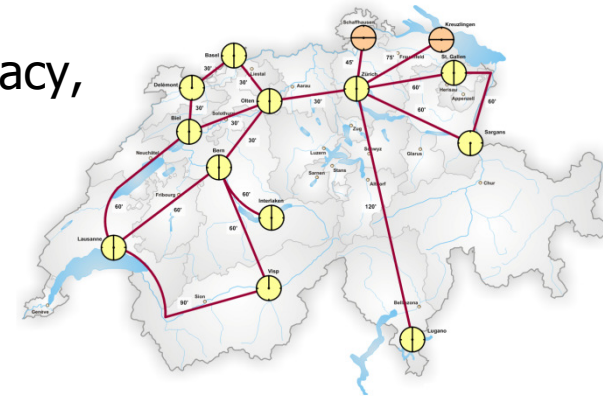
Citizen Participation is common in several planning procedures (e.g. BVWP, infrastructure projects, StEP, NVP, ...)

- obligatory
- voluntary



Legal intervention options for citizens, e.g. with regard to infrastructure projects, pollutant and noise emissions

A glance across the border: Swiss direct democracy, referenda – also for major infrastructure and transport decisions. Examples: Zürich transport system, SBB railway → infrastructure projects



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# Tendering, Contracting and Controlling

## EU Contract Obligation and Tendering Principle

### European Regulation

requires

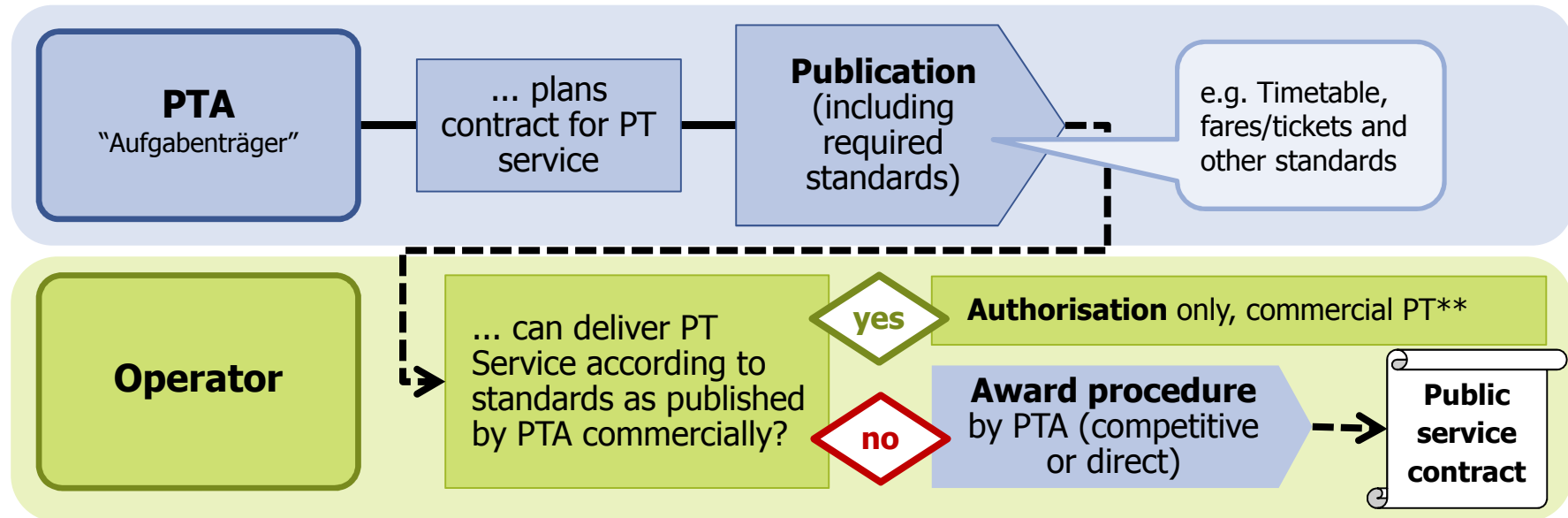
- conclusion of a **Public Service Contract** and
- in principle **competitive awarding**, but with direct award exceptions

In Europe and Germany:  
increasingly commercial **PT companies competing for tendered services** with financial compensation

**City Transportation still mainly by direct award** to municipal operator

# Tendering, Contracting and Controlling

## Commercial PT vs. public service contract\*

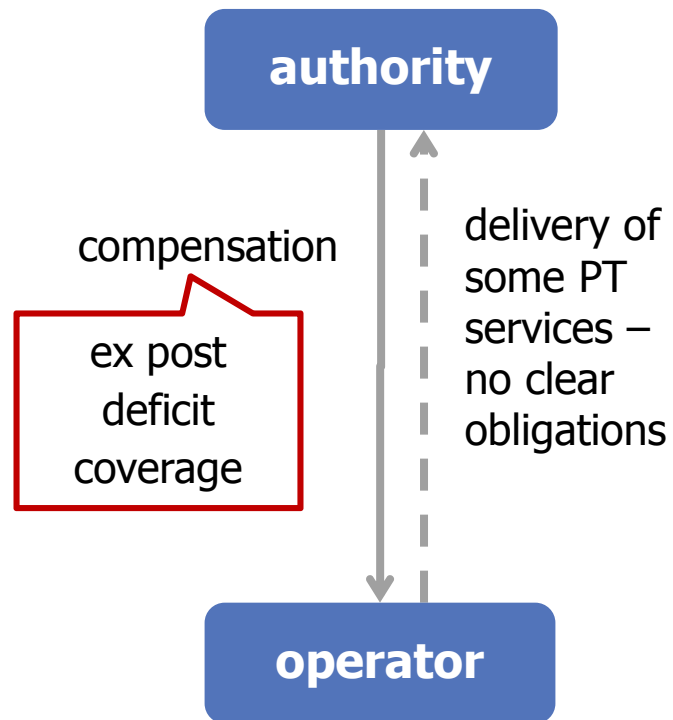


\* Simplified description, without details of procedure and authorisation authority.

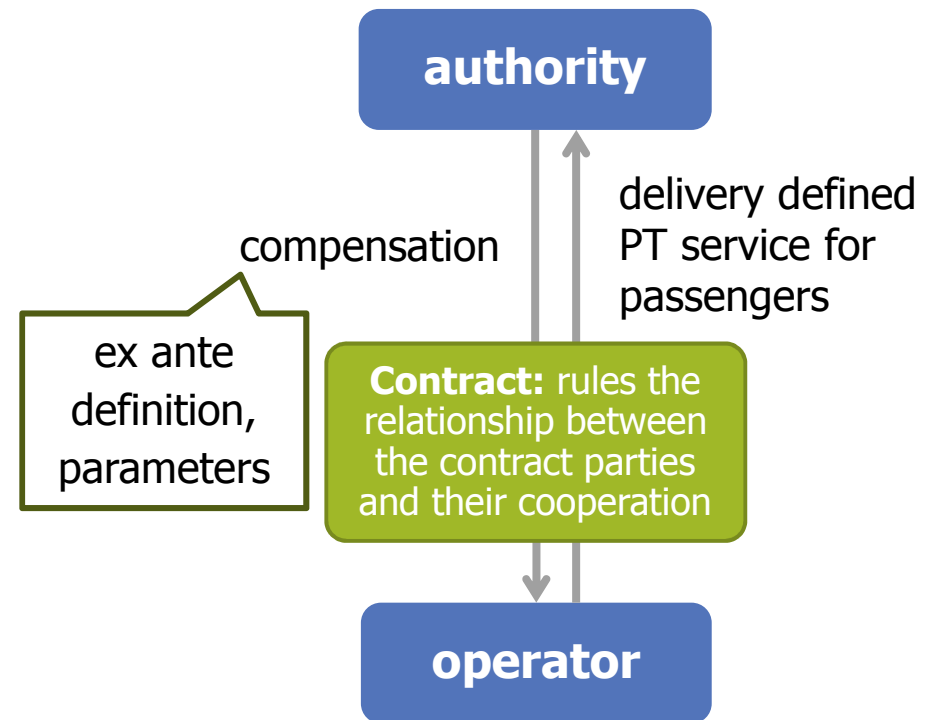
\*\* If more than one application: Competition for authorisation ("best transportation offer").

# Tendering, Contracting and Controlling Public Service Contract – Basic Principle

## former PT financing



## contractual financing

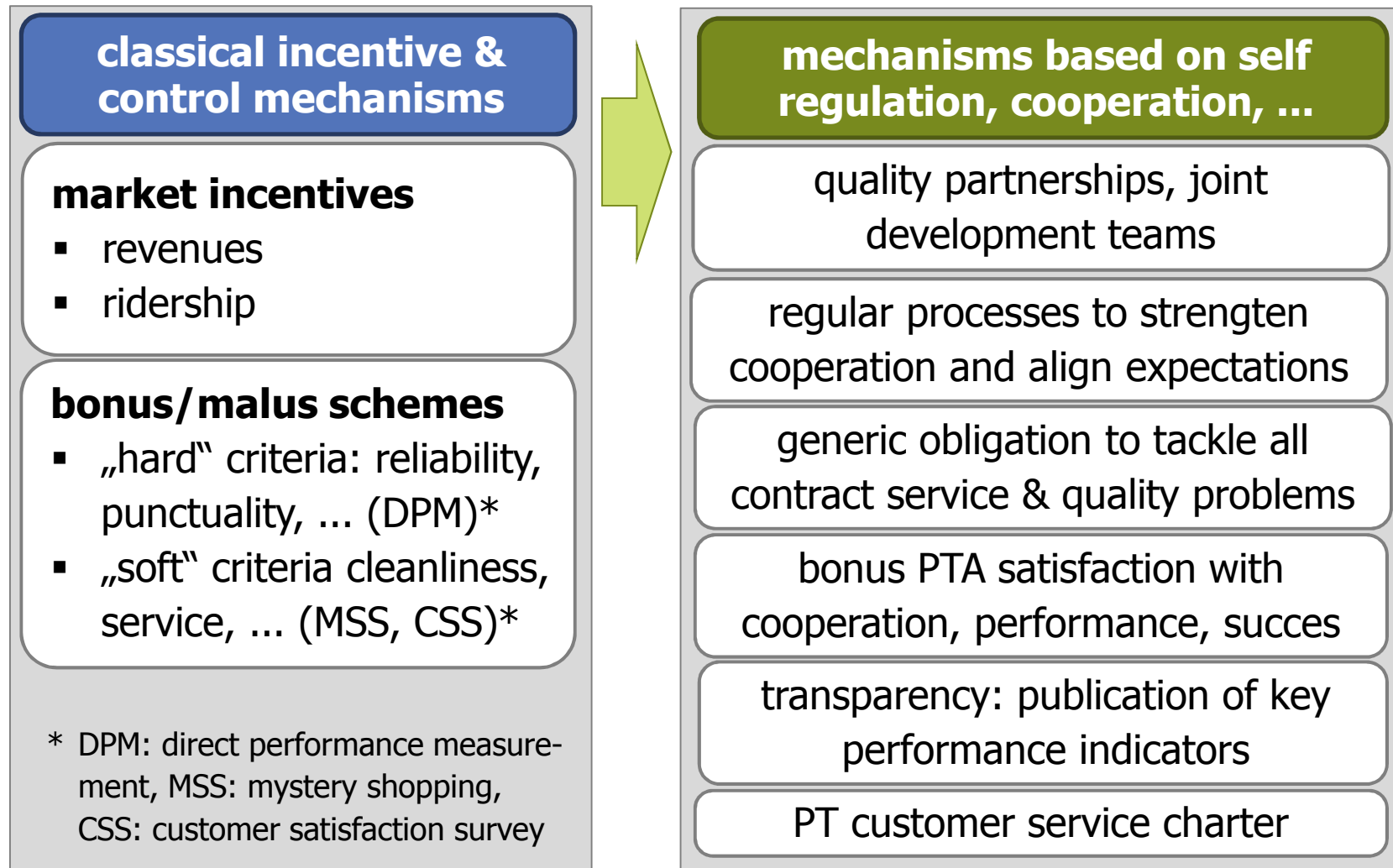


**Efficient and transparent spending of tax payers money**  
**Clear mutual obligations / rights PTA and operator**



# Tendering, Contracting and Controlling

## “Classical” Service Monitoring and Beyond



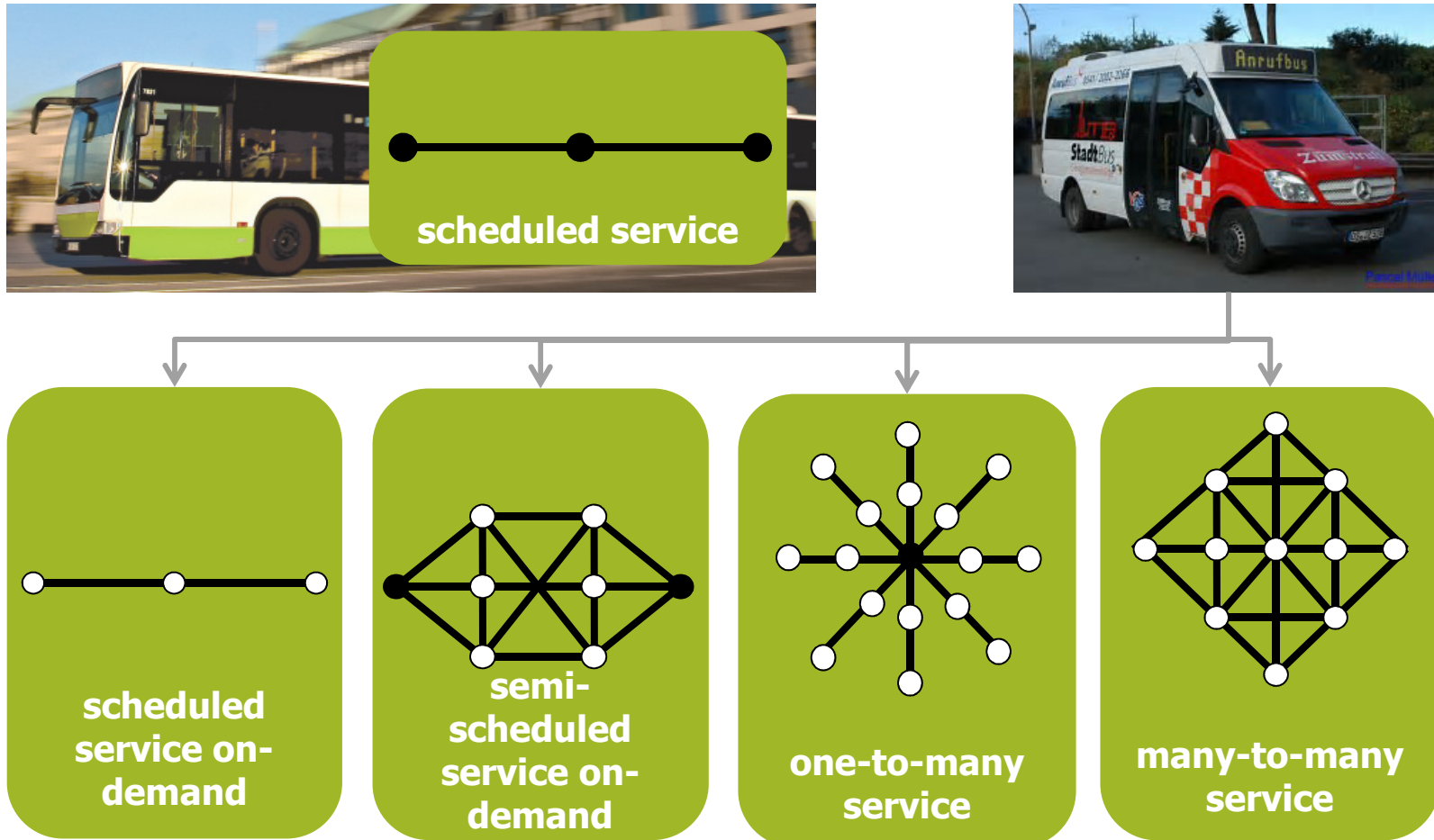
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# Current Developments in Transport and PT Markets

## Substitution of Rural Public Transport by DRT



- bus stop served regularly
- bus stop on-demand (or door service)

# Current Developments PT & Car Sharing

- Combination PT & Carsharing, often further services
- Example: üstra Hanover, combined mobility offer since the 90ies

Source:

<https://www.uestra.de/mobilitaetsshop/hannovermobil/>

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Wir bringen Hannover nach morgen.

ÜSTRA

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Sie sind hier: Mobilitätsshop > Hannovermobil

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MEHR INFOS >

**Handbuch Hannovermobil**

Alle Informationen zum Thema Hannovermobil und zum kompletten Mobilitätspaket finden Sie auch in unserem Handbuch.

ZUM PDF (573,47 KB) >

**Blauer Engel für Hannovermobil!**

Der „Blaue Engel für Mobilitätskarten“ wird vom Umweltbundesamt an Produkte verliehen, die nachhaltige, multimodale Mobilität ohne eigenen Fahrzeugbesitz ermöglichen. Für Hannovermobil hat der GVH nun als erstes Unternehmen bundesweit diese Auszeichnung erhalten.

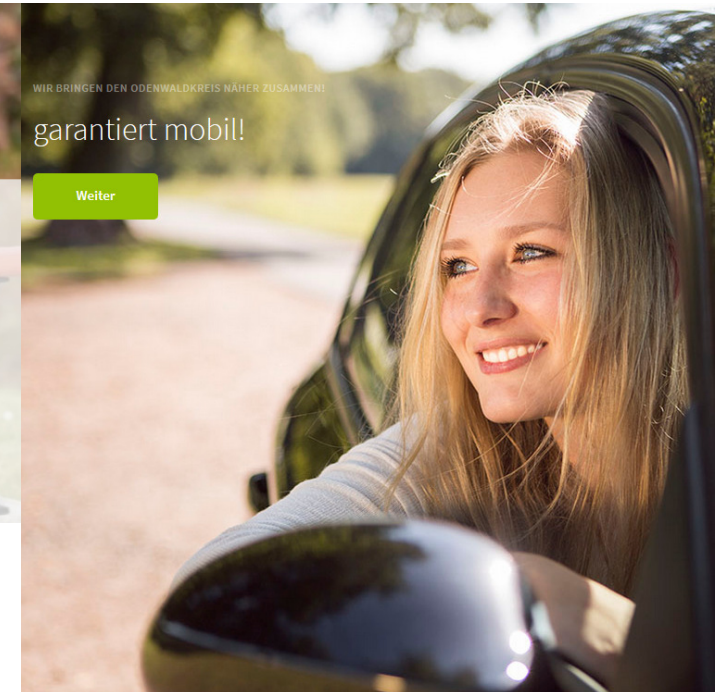
**Haben Sie Fragen zu dem Produkt:**

**Der ÜSTRA Kundenservice**

0511/ 166 80

# Current Developments in Transport and PT Markets

## PT & Ride Sharing – some examples



- Odenwald: Ride Sharing in addition to bus and on demand PT, mobility guarantee (taxi, rental car – surcharge), participation PTA OREG, state Hesse
- „Mitfahrbank“ in several villages
- ...

**Sources:** <https://mitfahrbank-kunitz.jimdo.com/>  
<https://odenwaldmobil.de/>



# Current Developments in Transport and PT Markets

## Automatic driving

- ICE highly automated; future: S-Bahn-systems?
- U3 Nürnberg (2008)
- Bus-Test STOAG, ...
- Overall: PT little progress

WIRTSCHAFT AUTONOMES FAHREN

### Wieso die Bahn bald auf Lokführer verzichtet

Von Nikolaus Doll | Veröffentlicht am 05.11.2015 | Lesedauer: 5 Minuten



Womöglich fahren die Züge der Deutschen Bahn bald ohne Lokführer

Quelle: picture alliance / dpa/jew pzi

Source: <http://busse-und-bahnen.nrw.de>  
<https://www.welt.de>

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BUSSE & BAHNEN NRW DAS MOBILITÄTSPORTAL NRW

Fachinformationen

Tickets & Tarife Service & Organisation Initiativen & Technik Aktionen News & Downloads

Startseite Service & Organisation Projekte Zukunft der Mobilität Autonomes Fahren Autonomes Fahren im ÖPNV

### Autonomes Fahren im ÖPNV



**Autonomes Fahren ist momentan in aller Munde – wenn es um die Automobilbranche geht. Im Öffentlichen Personennahverkehr (ÖPNV) wurde dieser Trend bereits einige Zeit früher entfacht und ist mittlerweile beinahe zum Stillstand gekommen. Warum der große Durchbruch (noch) nicht gelungen ist.**

Die Bahn fährt ein und hält, Fahrgäste steigen ein und aus, suchen sich einen Platz, die Ampel springt von Rot auf Grün – all das funktioniert im ÖPNV heute durch den Einsatz von Fahrzeugführern großteils reibungslos. Doch die typische Situation könnte durch die Automatisierung von Fahrzeugen schon bald in vielen Teilen Deutschlands der Vergangenheit angehören. Denn nicht nur die Automobil-, sondern auch die ÖPNV-Branche hat den Trend für sich entdeckt – auch wenn er dort deutlich größere Probleme hat, sich durchzusetzen. In Nürnberg sind bereits seit 2008 automatische U-Bahnen Einsatz, vor kurzem verkündete mit den Stadtwerken Oberhausen (STOAG) zudem ein Verkehrsunternehmen aus Nordrhein-Westfalen, sich dem Thema zu widmen.

#### Erster autonomer Bus in Oberhausen

Im Rahmen eines Projektes von dem französischen Fahrzeughersteller Navya und dem deutschen Projektplanungsbüro autoBus stellte die STOAG Anfang Mai 2016 ihr Gelände entlang der ÖPNV-Trasse für eine Testfahrt des ersten vollautomatisch und elektrisch fahrenden Busses in Deutschland zur Verfügung. Werner Overkamp, Geschäftsführer der STOAG, sagte gegenüber dem Newsportal Newstix: „Ich halte es für wichtig, vor dieser Technik nicht die Augen zu verschließen und sich mit der Frage auseinanderzusetzen, welche Rolle autonome Fahrzeuge im öffentlichen Verkehr spielen könnten.“ Autonome Busse könnten die vorhandenen Busse nicht ersetzen, aber eine Zubringerfunktion übernehmen und damit den ÖPNV stärken, so Overkamp.

#### Vor- und Nachteile autonomer Fahrzeuge

Befürworter des autonomen Fahrens werben mit einer geringeren Fehlerquote, die vollautomatisierte Fahrzeuge mit sich bringen sollen. Darüber hinaus könnten Verkehrsunternehmen Personalkosten einsparen, der Gefahr von Streikwellen

## 5. Questions and discussion

Any questions?

