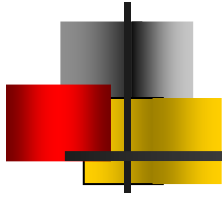


Symposium on Mileage-Based User Fees

International Applications Germany

**Sheraton Austin
April 14-15, 2009**



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I. Background / History

- In the **late 1980s** first “**official**” **considerations** regarding mileage-based tolling of heavy goods vehicles (HGV) using Autobahns.
- In **1994** a **test-site** for tolling-technologies was established (near Bonn).
- In **1995/1997** a **time-based user charge** for HGV’s on Autobahns was introduced in Germany and 5 other European countries (“Euro-Vignette”).
- **Early in 1999** the German government decided to introduce **mileage-based user charges** for HGV’s using Autobahns starting January 1, 2003.

Political goals stated:

- (1) **Additional money** for financing the Federal Transportation Infrastructure
- (2) **Shifting** freight transportation **from road to rail** and **inland waterways**
- (3) **Improving the competitiveness** of the German logistics industry

II. Finance – Commission

Recognizing, that tolling HGV's on Autobahns will not solve the problems of financing the surface transportation infrastructure, on October 14, 1999 the federal government appointed a “**High Commission on Financing the Federal Transportation Infrastructure**”.

Interim Report (February 2, 2000)

statements regarding the introduction of the mileage based user charges:

- **technological configuration** that allows a gradual expansion of the mileage based road user charging to all types of motorized road vehicles and all kind of roads without the necessity of a technology-change
- change of the **schedule** to allow for a considerably longer period for the establishment of the tolling-system.

Finance Commission Final report Selected Findings – road sector

- (1) Germany's surface transportation infrastructure faces a latent **maintenance crisis** and numerous bottlenecks. The longer it is delayed, the more costly the settlement will be.
- (2) The existing legislation offers **no safe source** for financing the Federal Highways.
- (3) An **essential relief** of the Federal Highways by the railways is impossible.
- (4) The **traditional tax financing** has proven not to be suitable to achieve a qualified maintenance and development of the Federal Transportation Infrastructure.

Finance Commission Final report Selected recommendations general I

(1) The financing of the Federal Transportation Infrastructure should **gradually be converted** to financing by the user, profiteer and / or causer – to the possible extend with regard to the boundary conditions of the single transportation sectors > comprehensive paradigm-shift .

Advantages, potentials and options of user financing (road sector):

- Direct link between using the roads, paying the charge, revenue employment
- Fair and differentiated attachment of the costs with regard to its causing.
- Coverage of the real financing needs.
- No dependency of the changing impacts on the general budgets.
- Separation of the discussion about traffic-related taxes and infrastructure costs.
- All user pay according to the same principles.
- Efficient instrument of traffic management.
- Taking full advantage of public-private-partnerships.

Finance Commission Final report Selected recommendations general II

- (2) The **revenue from** the user-charges is to be used exclusively for the sector of the infrastructure from which it was derived. Exceptions are to be made only in clearly defined cases.
- (3) The **amount of the charges** is to be based exclusively on the “internal” costs of the infrastructure; “external” costs should be accommodated by other means.
- (4) The whole Federal Transportation Infrastructure and all tasks associated with it are to be given into the hands of **private management**. The responsibility for the infrastructure and the control of its development remain with the Federal Government.
- (6) The **limits of responsibility** between the Federal Government, the Federal States, the Counties and the Communities are to be redefined.

Finance Commission Final report Selected recommendations roads I

- (1) A special “**Highway Financing Agency**” should be established immediately. The Agency should be provided with all user charges for exclusive employment in the construction, maintenance and operation of the Federal Highways. The Financing Agency may be converted to one or more Management/ Operator Agencies later on.
- (2) The **technical system** for charging the distance-based toll on Autobahns should ensure upward-compatibility and interoperability.
- (3) Heavy trucks with a permissible maximum weight of 12 tons and more should be charged an **average user charge** of 25 Pfg. (12.6 Euro-Cent) per vehicle-kilometer on Autobahns.
- (4) At the same time that the mileage-based toll collection for heavy trucks using Autobahns is started, **time-based tolls** for small trucks and passenger cars should be introduced.

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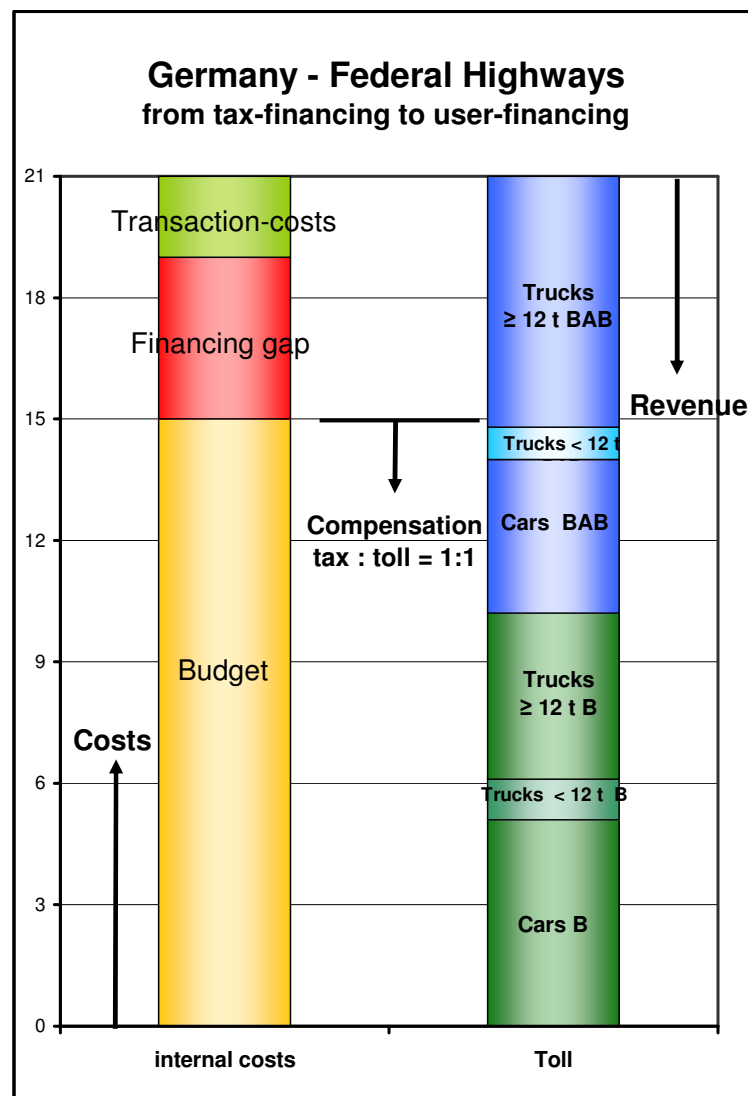
Finance Commission Final report Selected recommendations roads II

(5) Charging of mileage-based tolls should be introduced on **all Federal Highways** and for **all types of cars**, as soon as the technical means are available at acceptable costs.

(6) The charging should gradually consider **additional components** with regard to traffic management and environment.

(7) Beginning at the time, at which the net-toll-revenue exceeds the financing-gap on the basis of the actual federal budget and budget plans, traffic related-taxes should be reduced; the **compensation** should be 1:1.

All stakeholders fully agreed
>>> „window of opportunity” wide open !!!



III. Preparation / Implementation

- In terms of the **technical solution** the decision was made according to the recommendations of the “Finance Commission” – GPS/ GSM.
- The **average toll** was decided to be 12.4 Euro-Cent per vehicle-kilometer, differentiated with regard to No. of axles (2 classes) and environmental standards (three categories) – range from 9 to 14 €-Cent.
- The decision for the **operator** was first made in fall 2001 in favor of the “Toll-Collect-Consortium”.
- The **runner-up-consortium protested** against the decision at court; the protest was accepted.
- After about a one year delay the **contract was finally awarded** on September 20, 2002 - again in favor of the “Toll-Collect-Consortium”.
- Charging was now aimed at starting on **August 31, 2003**. The Euro-Vignette was cancelled effective that date.



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- The schedule did not work. After complicated discussions early in 2004 it was decided to change neither the **operator** nor the **tolling-technology**.
- The **new schedule** aimed at starting the toll collection on January 1, 2005. This time the schedule worked. The system has performed without any problems since it was launched.

Political handling

- Only 50 % of the **net-revenue** was **distributed** to the road sector; 38 % to the rail-sector, 12 % to the inland waterways.
- The revenue was **not used to compensate** for the undisputed financing gap but instead to further reduce the tax financed budget for the transportation sector.
- The revenue is **not transferred** to the transportation-sector **directly** but via the Department of Finance.
- The political discussion regarding an extension of tolling focused exclusively on **additional money for the general budget**.

>>> **“window of opportunity” closed !!!**

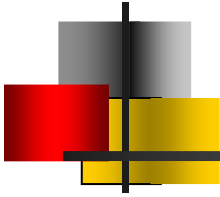
IV. The Tolling System

Basic Principles

- No impact on the traffic flow, no special toll plazas, no compulsory toll-lanes, no speed-limit caused by toll collection, non-discriminatory access for foreign vehicles.
- Dual tolling system (Automatic and manual booking – points of sale, internet, call center; reasons: non-discrimination / no interruption in case of problems with GPS)
- Multiple enforcement system (Stationary checks on site, mobile checks on site + checks on the premises of haulage companies).
- A private operator runs the tolling system; a governmental agency is responsible for the enforcement.

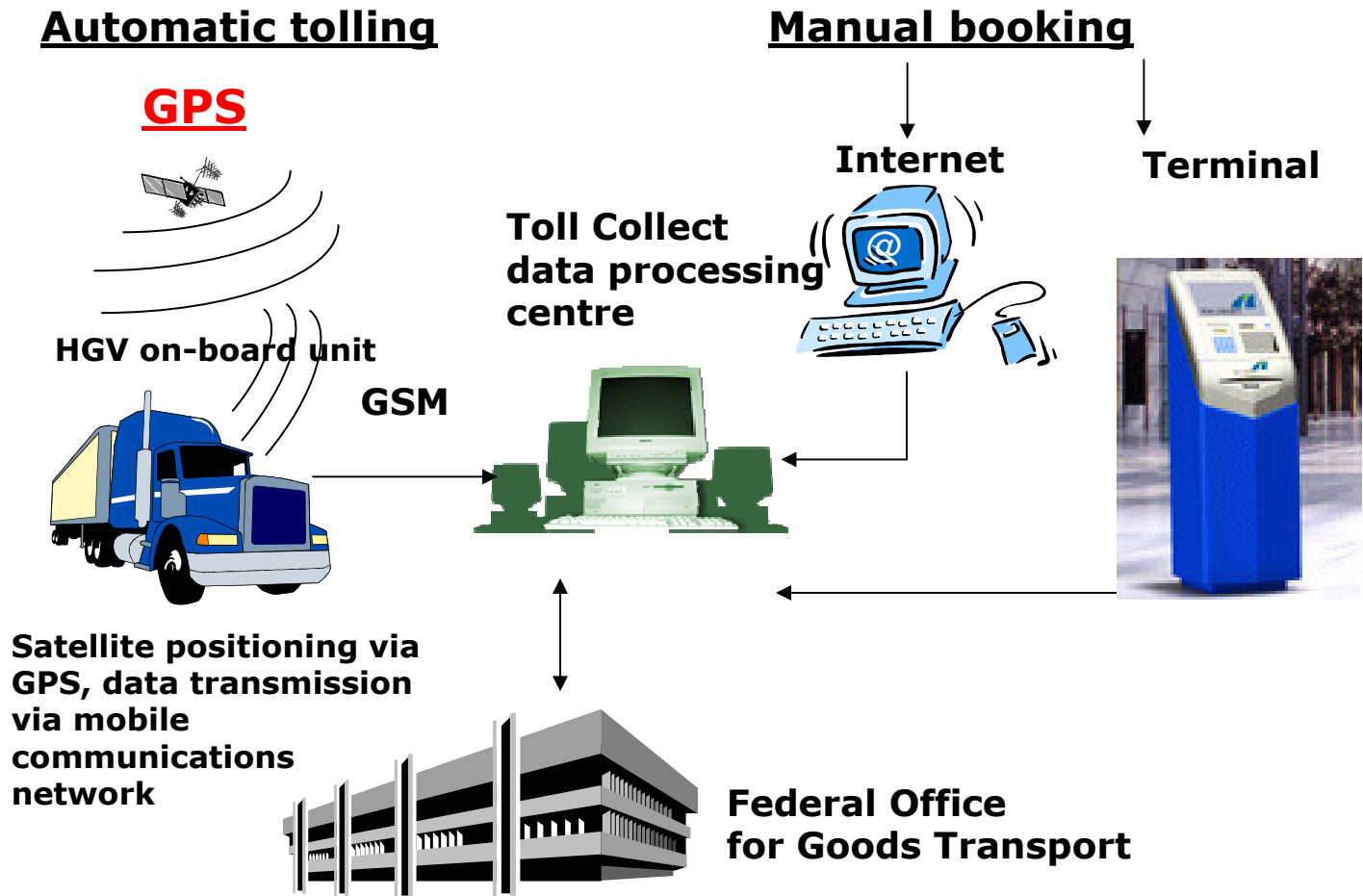
Technology - Automatic System

- Based on GPS / GSM
- Booking via in-vehicle onboard unit
- Interoperable / DSRC module for infrared or microwave

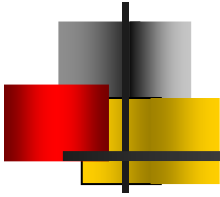


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System Structure



Source: Toll Collect

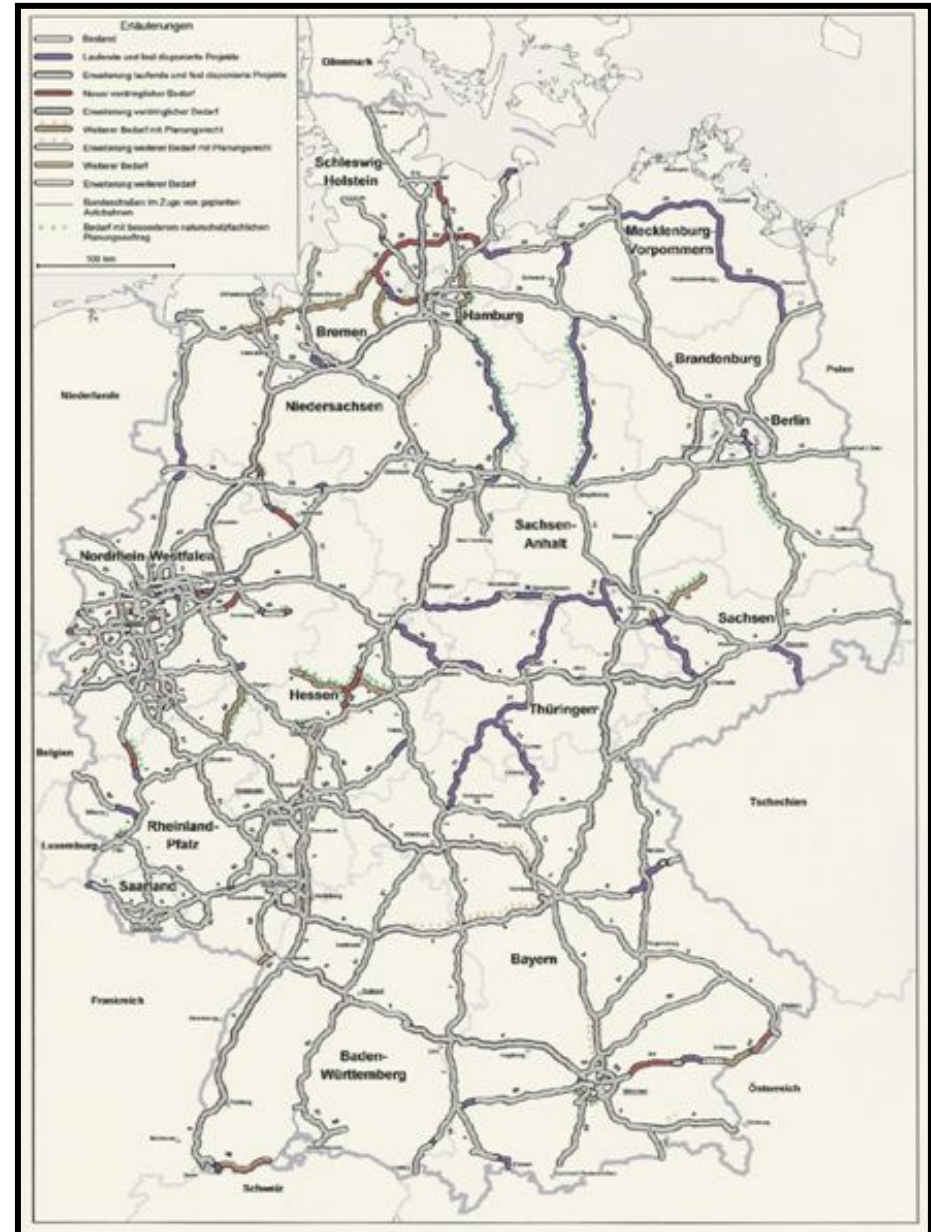


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Facts and Figures

- Tolled Autobahn-Kilometer: 12,000
- No. of junctions : 2,213
- No. of intersections : 251

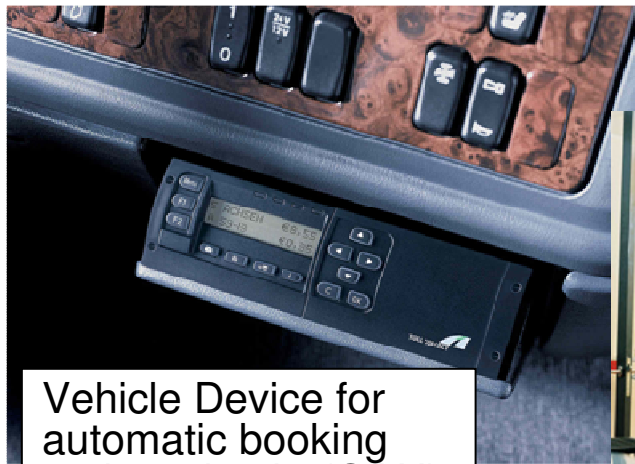
Germany's
Autobahn network



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Facts and Figures:

- 3,500 payment points for manual booking (POS)
- 300 gantries for automatic monitoring (stationary enforcement)
- 150 checkpoints (second element of stationary enforcement)
- 280 vehicles for automatic monitoring (mobile enforcement)
- 650 persons control personnel (Federal Freight-Transportation Authority)
- 150 beacons for additional determination of truck positions



Vehicle Device for automatic booking "onboard unit" (OBU)



Point of Sale (POS) manual booking



Gantry for automatic monitoring (Stationary enforcement)



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Status December 31, 2008:

- Registered for the system:
 - > About 122,000 companies (44,000 foreign)
 - > about 937,000 trucks (444,000 foreign).
- Trucks equipped with onboard units: About 650,000 (270,000 foreign).
- Share of automatic booking: more than 90 % of the transactions
- System reliability: 99.75 %
- Toll-violator-rate: < 2 %
- Rate of complaints against bills: 0.003 %.
- Fines >> company: first violation 200 € (negligence)/ 400 € (intentional); maximum 20,000 € >> driver: half the company fine per case
- Average toll effective January 1, 2007: 13.5 / January 1, 2009: 16.3 (18.5) €-Cent

year	2005	2006	2007	2008	2009
tolled vehicle-kilometer (bn)	23.9	25.8	27.4	27.6	
gross revenue (bn Euro)	2.86	3.08	3.36	3.46	(5.10)

Selected Impacts / Non-impacts (as of 2008)

- No traceable increase of the **freight-charges**.
- No traceable impact on the **consumer prices**.
- No significant impact on the structure of the **logistic-industry**.
- No traceable **shift** from road **to rail or inland waterways**.
- Only a limited amount of trucks use **alternate toll-free routes**
- Significant tendency to buy **trucks with higher environmental standards**
(share of vehicles with **Euro 5 Standard**: 1 % in 2005, 40 % at the end of 2008)
- No significant shift from heavy trucks **to light trucks**.
- However: significantly more trucks in the **10-12 ton range**.
- Significant tendency to a higher average **load-factor**.
- Significantly less truck-kilometer **without cargo** on Autobahns (15 %).

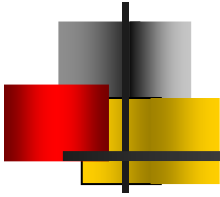
V. The question of technology

GPS,GNSS / GSM or DSRC or RFID or ANPR or, or, or...

- goals, objectives, purposes, requirements to be satisfied, legal / regulatory conditions, project-type, project-size,
- options, perspectives and potentials.

The technology for mileage based road user charging schemes of all scales is **available and mature** regarding all relevant components. However, road user charging is not primarily a question of technology. It is a question of:

- trust in the credibility of politicians by the public,
- acceptance by the various stakeholders,
- real transaction costs in relation to the revenue,
- use of the revenue,
- additional burden for the road user or compensation on the tax side,
- efficiency in terms of traffic management and preserving the environment,
- equity, privacy, non-discrimination, administrative and legal conditions,
- interoperability.....



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Interoperability is a real challenge



Source: Newcastle University

VI. The question of transition

- **Time-based road user charging** is an appropriate interim solution until the costs for implementing distance-related user charging are acceptable and / or a political consensus is obtained.
- The **electronic Vignette** is a much better interim solution than the paper vignette, in particular because important components of operating the system can be integrated into the final stage of a distance-based solution



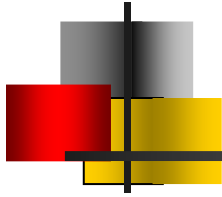
Quelle: AGES

While introducing time-based tolling as an entry or interim solution:

- the **politicians** get the chance to prove their **credibility** regarding the use of the revenue / the entrance into a systematic paradigm shift.
- the **users** get the chance to experience the **effects** of the tolling in terms of a reduction of traffic-related taxes and / or improvements of the transportation infrastructure.

VII. Conclusion

- Mileage based road user charging is the only sustainable option for a qualified maintenance and development of the road transportation infrastructure.
- A consistent, fair and long term oriented road pricing policy has a viable chance to be accepted by all stakeholders and the general public.
- Prerequisite for the success is a consistent, convincing and reliable transport policy.



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