

IBTTA 75th Annual Meeting & Exhibition  
Join IBTTA to Celebrate 75 Years of Driving Change  
OCTOBER 7-10, 2007 | VIENNA, AUSTRIA

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**IBTTA**  
International Bridge, Tunnel and Turnpike Association  
75 YEARS OF DRIVING CHANGE

## Strategies for the future

### Trends, options and roles

João Bento  
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Executive Director of Brisa

Vienna, October 8, 2007

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## Toll roads\* – an old story

- Treaties mentioned the use of tolls in India, before the 4<sup>th</sup> century BC.
- Aristotle (384 BC–322 BC) refers to tolls in Arabia and other parts of Asia.
- Germanic tribes charged tolls to travelers across mountain passes.
- Road tolls were used in the Holy Roman Empire in the 14<sup>th</sup> and 15<sup>th</sup> centuries.
- Many modern European roads were originally built as toll roads in order to cover construction costs.
- *Turnpike trusts* were established in England in the early 18<sup>th</sup> century (e.g. the A5).

\* Wikipedia

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## In the UK

- First turnpike road authorized in 1663 for a section of the Great North Road.
- *Turnpike Act* established in 1706 the first *turnpike trust*, leaving a group of trustees managing a section of the London-Coventry-Chester road.
- Initial trusts were established for around twenty years.  
Expectation: trust would borrow money to repair road and repay debt over time, with the road reverting to the local authorities.  
Reality: initial debt was rarely paid off; trusts were renewed as needed.
- By 1825 over 1,000 trusts controlled 40,000 km of road in England and Wales.

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## In the USA\*

- Throughout the 19<sup>th</sup> century between 2,500 and 3,200 private companies (?) successfully financed, built, and operated toll roads across the country.
- Three especially important eras:
  - the turnpike era of the eastern states 1792 to 1845;
  - the plank road boom 1847 to 1853; and
  - the toll road of the far West 1850 to 1902.

\*H.Net Encyclopedia of Economic and Business History

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## In Portugal

parência o resultado de adiantamento total da riqueza publica, dependente das boas estradas. §. CXVI.

A construção de *Barreiras* he evidentemente o melhor meio para a conservação das estradas, e como tal he tem elle o mesmo legitimo em Inglaterra; mas ou seja para poucar parências de adiantamento das estradas, ou seja para poucar afluencia de viajantes occasionais, e estancos, e a maior parte das estradas de Portugal não são susceptíveis de semelhante meio.

The construction of *Barriers (tolls)* is evidently the best means for the construction of roads and, as such, has been legitimately established in England

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## Tolls?

- The existence of tolls should no longer be an issue
- Toll roads and toll road concessions have delivered excellent results worldwide
- However, the debate around their nature, their role, their existence, their owners, their managers, remain alive in many geographies

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## Crucial questions

- What are the crucial aspects at the core of road infrastructure development?
  - Funding
  - Congestion
  - Safety and other (novel) user requirements / social pressure
  - Role of the private initiative
  - Type of private actors
  - Interaction between different actors and different schema to promote increased mobility

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## Sustainability of funding

How sustainable are (some or most of) the existing funding schema?

- **No tolls**
  - Petrol tax
  - General income tax
  - Dedicated (time-based) payment
- **Availability**
- **Shadow "tolls"**
- **Tolls**
  - Use of (artificially fixed) inappropriate toll tariffs
  - Lack of realism in its updating
  - How to solve unbalanced requirements?
    - Low demand
    - Disproportionately expensive infrastructures

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## (non-exhaustive) summary of chronicle deficit situations

| Region                   | Pathology                                   | Purpose of funds                                           |
|--------------------------|---------------------------------------------|------------------------------------------------------------|
| • Central-Eastern Europe | • Lack of adequate infrastructures          | • New/better roads                                         |
| • Northern Europe        | • Chronicle congestion                      | • Maintenance and capacity upgrade                         |
|                          |                                             | • Budgets restrictions                                     |
| • Southern Europe        | • Lack of maintenance of non-conceded roads | • Maintenance and capacity upgrade                         |
|                          | • Incomplete networks                       | • Rebalance state budgets for roads                        |
| • North America          | • Congestion, maintenance, capacity upgrade | • Replacement of archaic / insufficient funding mechanisms |
| • South America          | • Existing roads requiring major upgrading  | • Upgrading of existing roads                              |

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## Price – the importance of explicit cost

User-payer principle works even for partial costs

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## If tariff is also at tender

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## Congestion

There are two main ways to tackle congestion constraints

- Technology
  - ITS
    - Dynamic routing, higher IVC, VVC, etc.
  - "smart" solutions
    - Hot lanes, HOV lanes, etc.
    - Generalization of dynamic pricing
- Funding, i.e. increasing existing capacity
  - Widening of existing roads
  - Upgrading of alternative roads
  - Construction of new roads

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## Safety / user requirements

- **Safety** arises amongst the top picks for choosing tolled motorways on major user satisfaction surveys
- Although when compared to other road offers, motorway accident statistics are very favorable, the situation is still far from ideal
- (much) Better information
- Better road assistance
- Better service areas; better services and more services
- Environmentally friendlier roads
- Excellence in road operations
- Excellence in automatic tolling
- ...

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## user requirements

- **Increasingly sophisticated users will demand better service and more services from road operators**
- **Danger for road operators:**
  - Being taken as a new kind of tax collector

**Social risk    ⇒    Political risk**

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## Role for the private initiative

- ... **Bob Poole will handle this subject**
- **A word about type of actors and models...**

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## Traditional European concession model: Atlantia(IT), ASF(FR), Abertis(SP), Brisa(PT)

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## Typical PPP-PFI structure

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## Proper allocation of risks

| Risk                        | Case        | Grantor    | Concessionaire |
|-----------------------------|-------------|------------|----------------|
| Design/Exprop./Construction | Traditional |            | ██████████     |
|                             | PPP-PFI     | ██████████ |                |
| Operation                   | Traditional |            | ██████████     |
|                             | PPP-PFI     | ██████████ |                |
| Environment                 | Traditional |            | ██████████     |
|                             | PPP-PFI     | ██████████ |                |
| Traffic                     | Traditional |            | ██████████     |
|                             | PPP-PFI     | ██████████ |                |
| Planning                    | Traditional |            | ██████████     |
|                             | PPP-PFI     | ██████████ |                |
| Financing                   | Traditional |            | ██████████     |
|                             | PPP-PFI     | ██████████ |                |
| Force Majeur                | Traditional | ██████████ |                |
|                             | PPP-PFI     |            | ██████████     |

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## Options for the future?

- Real toll PFI concessions
- Increasing technology intensity
- New and better services
- More, more sophisticated and more useful information
  
- Higher interaction between modes (?)

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## Variable term concessions

Revenues

Target NPV of revenues

Strong traffic  
 Expected traffic  
 Weak traffic

Variable duration period

22 Min 26 30 Max

Years of concession