



# Promoting & Implementing A High Speed Project (Lessons learnt from experience)

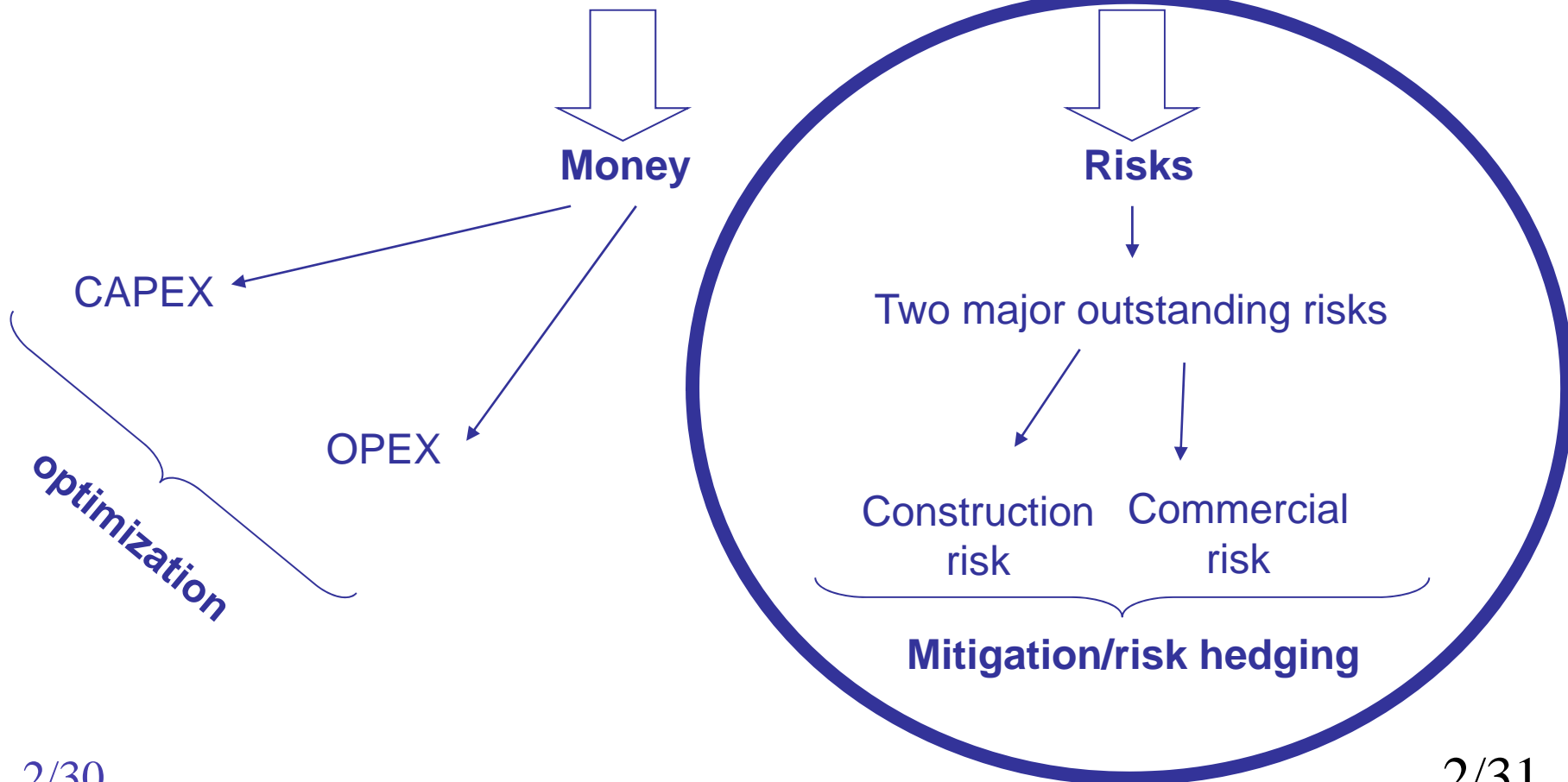
**Michel LEBOEUF**

*SNCF, Director for Major Projects*

*Paris, France*



Strategy consists in optimizing the means in an unchartered context.





Track 201



## Construction Risk





## Track 201

- Political risk (stop and go)
- Dispute over the route
- Land acquisition (legal road blocks)
- Ever-increasing pressure over environment mitigating measures

**To be handled  
by public bodies**

Not in my backyard garden!

Such legal dispute is better addressed by a public Authority who can argue about Public Welfare Utility

- Costs under estimation
- Infrastructure components
- Delays in construction

the construction over time with the operating scheme reliability and or availability of operational disturbance capacity for potential growth

- Costly for maintenance
- Costly for renewals

- Dispute during the homologation or certification process





## Track 201

- Political risk (stop and go)
  - Dispute over the route
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- Ever-increasing pressure over environment mitigating measures

**To be handled  
by public bodies**

If the body in charge of the construction is at risk, then it is OK.  
If not, an incentive must be given through contractual terms.

- Costs under estimation
- Delays in construction

**To be dealt  
within  
the organization**

- Quality of the construction over time
- Inadequacy with the operating scheme
- Insufficient reliability and or availability
- Lack of capacity for potential growth
- Costly for maintenance
- Costly for renewals

- Dispute during the homologation or certification process



## Track 201

- Political risk (stop and go)
  - Dispute over the route
  - Land acquisition (legal road blocks)
- Ever-increasing pressure over environment mitigating measures

**To be handled  
by public bodies**

A trade-off between expensive high quality construction and high maintenance costs has to be made. An incentive in reducing the life cycle cost is needed.

- Costs under estimation
- Trade-offs between infrastructure components
- Delays in construction
- Quality of the construction over time
- Inadequacy with the operating scheme
- Insufficient reliability and or availability
- Increase of operational disturbance
- Lack of capacity for potential growth
- Costly for maintenance
- Costly for renewals

**To be dealt  
within  
the organization**

**Involvement  
of an operator  
from  
the very  
beginning**

- Dispute during the homologation or certification process



## Track 201

### Construction Risk

- Political risk (stop and go)
- Dispute over the route
- Land acquisition (legal road blocks)
- Ever-increasing pressure over environment mitigating measures

To be handled  
by public bodies

The rules and standards have to be established beforehand. A follow-up is necessary. Even on security and safety a deal has to be made.

- Costs under estimation
- Gaps between infrastructure components
- Delays in construction

To be dealt  
within  
the organization

Quality of the construction over time  
Compatibility with the operating scheme

Involvement  
of an operator  
from  
the very  
beginning

- Inability for sufficient reliability and or availability
- Inability to recover in case of operational disturbance
- Lack of capacity for potential growth
- Costly for maintenance
- Costly for renewals

co-operation between  
administration  
and owner

- Dispute during the homologation or certification process



Track 201



# Purshasing the Rolling Stock







## Main issues to address:

- Appropriate tender documents
  - Choice of criteria:**  
**Fixed/variable cost, Life cycle cost, Capacity, RAMS**
- Flexibility over time
  - Evolution of the society and adjustment to traffic requirements:**  
**A major issue: telecommunications**  
**+ Network evolution**
- Role devoted the manufacturer
  - Just a supplier/ a supplier also in charge of maintenance**  
**+ issue of homologation**
- Optimum size of the fleet
  - Traffic seasonality as a key parameter**
- Optimum size of the market
  - A bet over the traffic forecasts, their future trend**  
**And the network development**



# Purchasing the Rolling Stock

## Track 201

### Main issues to address:

- Appropriate tender documents
- Flexibility over time
- Role devoted the manufacturer
- Optimum size of the fleet
- Optimum size of the market

Involvement of an operator

Choice of criteria:

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Evolution of the society and adjustment to traffic requirements:

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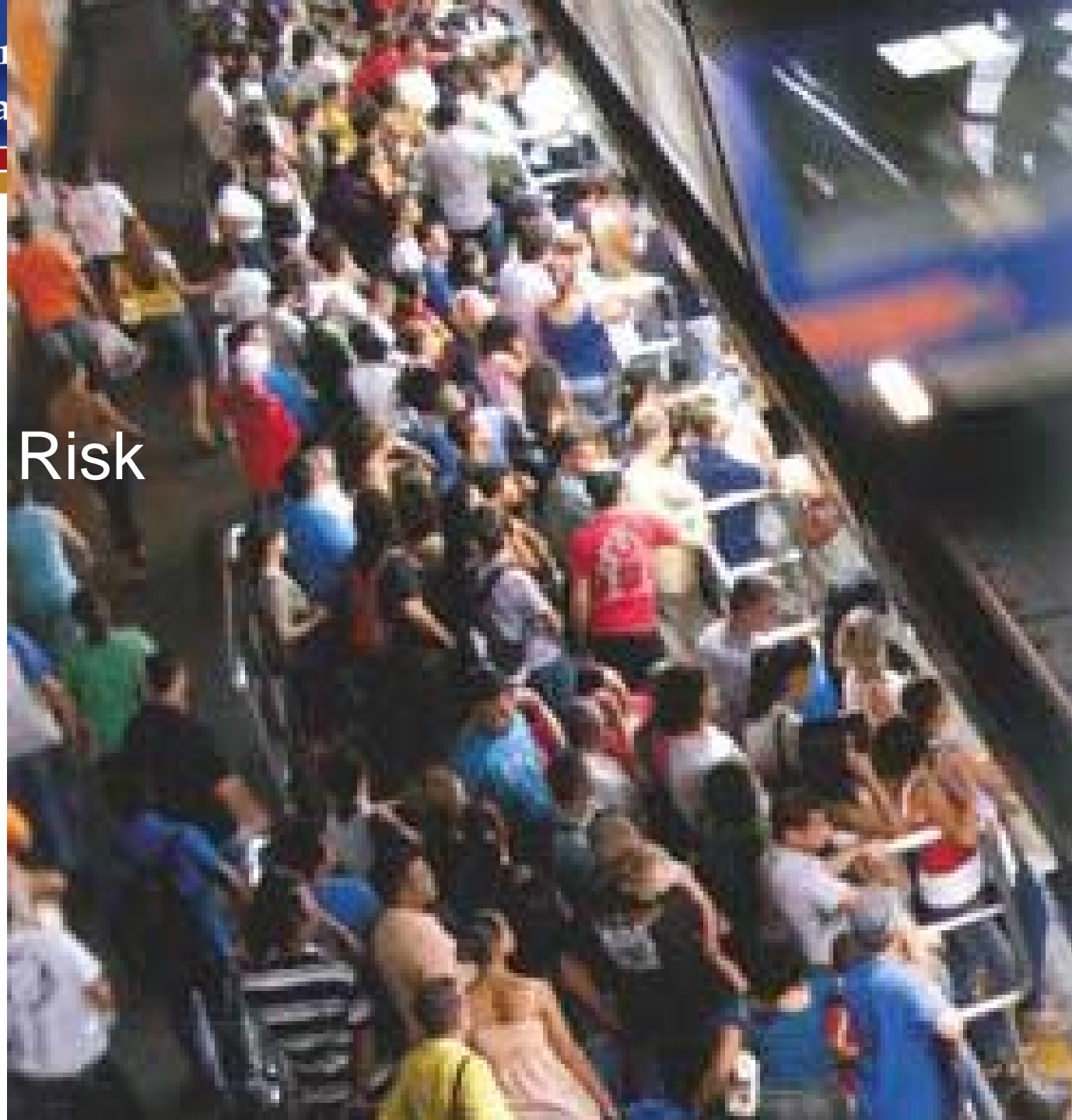
Traffic seasonality as a key parameter

A bet over the traffic forecasts, their future trend

And the network development



## Commercial Risk





## Track 201

- Imperfect knowledge of the market
- Too pessimistic or optimistic traffic forecast
- Wrong evaluation of the sensitivity to prices

**Hiring a traffic forecaster ready to share the risk such as an operator**

Whatever is the quality of a consultant or of several consultants, nothing compares with commitment.

- Length of competitors' reaction
- Insufficient notoriety
- Inadequate market segmentation
- Wrong service packaging

- Failure in securing the customer loyalty
  - Lack of flexibility in the service
  - Inability to adjust the fare policy
- Quite impossibility in adapting the product
- Lack of real time reactivity to the change in competition



## Track 201

Just 3 months!

- Imperfect knowledge of the market
- Too pessimistic or optimistic traffic forecast
- Lack of understanding of the sensitivity to prices
- Under evaluation of the strength of competitors' reaction
- Insufficient notoriety
- Inadequate market segmentation
- Wrong service packaging
- Failure in securing the customer loyalty
  - Lack of flexibility in the service
  - Inability to adjust the fare policy
- Quite impossibility in adapting the product
- Lack of real time reactivity to the change in competition

**Hiring a traffic forecaster ready to share the risk such as an operator**

**Marketing & Timing are of the essence**





## Track 201

- Imperfect knowledge of the market
- Too pessimistic or optimistic traffic forecast
- Wrong evaluation of the sensitivity to prices

**Hiring a traffic forecaster ready to share the risk such as an operator**

The rolling stock is bought for 30 years  
But the service and the product must be constantly renewed

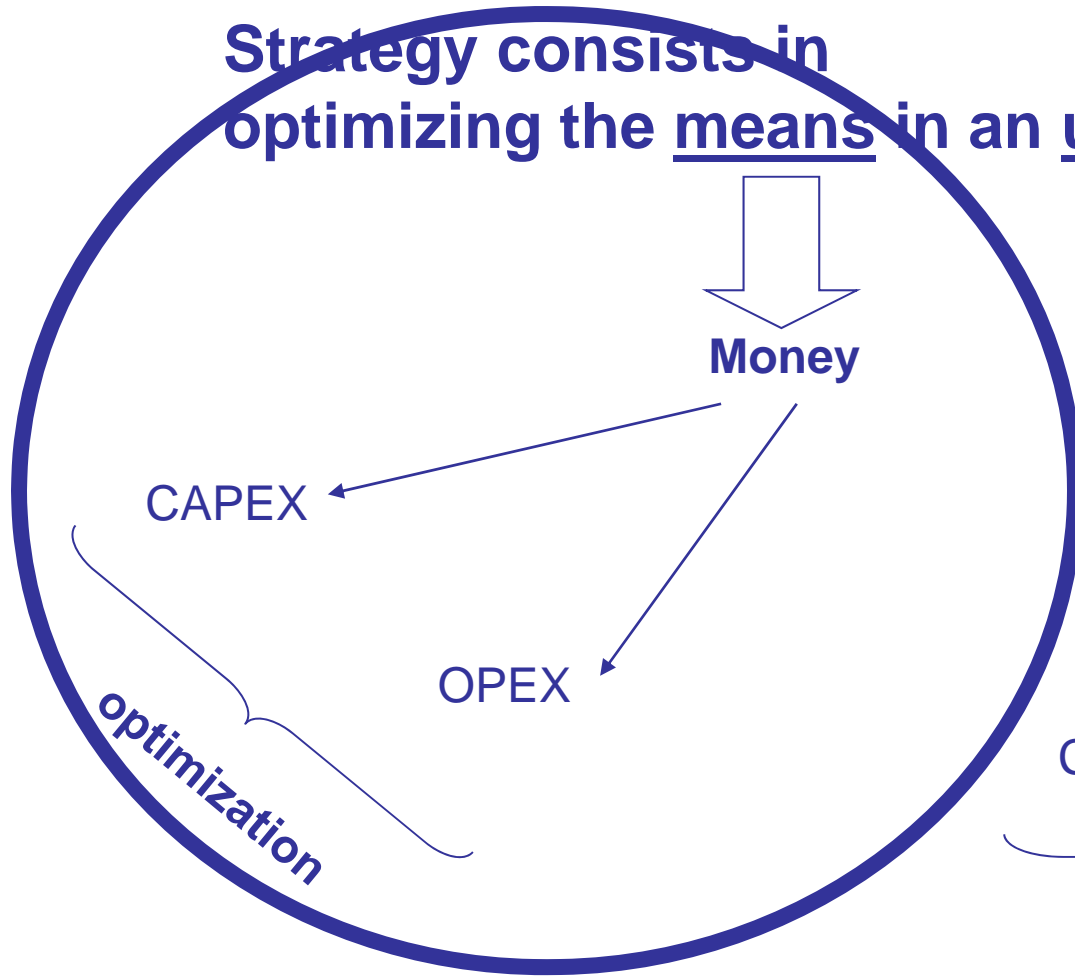
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**Marketing & Timing are of the essence**

**Freedom & Flexibility + Real time revenue management**



Strategy consists in optimizing the means in an unchartered context.





## CAPEX: where the money comes from?



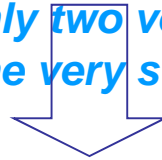


Track 201

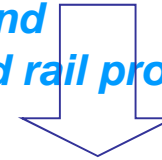
*After having implemented and commissioned  
several thousands of miles of high speed lines, ...*

*... and having reviewed  
many similar projects  
In Europe and Asia, ...*

*... only two very basic facts stand  
as the very staple in high speed rail projects.*



Such projects  
are mainly characterized  
by their construction cost,  
their service quality  
and the market  
where they will take place



There are only  
two funding sources:  
the tax payor  
and the passenger.

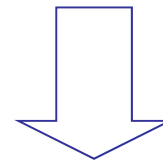
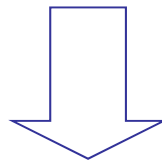
*... And that's all!*



## Track 201

Such projects are mainly characterized by their construction cost, their service quality and the market where they will take place

There are only two funding sources: the tax payor and the passenger.

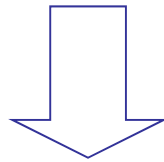


*The profitability of the project is linked to its physical features and its market and any legal, organizational and financial scheme will not dramatically change its profitability...*

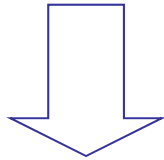




**In most cases a High speed Rail project is not profitable enough to be funded by the sole private sector**



**Public money is needed**



**Why should a public body finance a HSR project?**

**With which proviso this money will be invested?**



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### Why should a public body finance a HSR project?

- Prevention of climate change
- Role of infrastructure in the creation of wealth
- Territory management (accessibility)
- City management (urban planning)
- ...

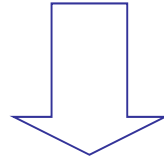
### With which proviso this money will be invested?

- Socio-economic benefit → conditions on the fare system
- Capacity purchase → Ability to use part of the capacity for local services
- ...

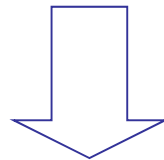


## Track 201

**Public money is needed**



There are only two funding sources:  
the taxpayer on one hand  
and the passenger on the other hand



The financial engineering work  
consists in finding the best compromise  
between these two funding sources

Public money → Conditions

Potential  
Involvement  
of private  
parties

Risk sharing  
assessment



## Public – private partnerships





## Track 201

### BOT for infrastructure management

#### Risk on

Construction costs  
Maintenance costs  
Operations costs

#### Versus

Almost fixed revenues  
+ incentives

#### Risk on

Construction costs  
Maintenance costs  
Operations costs  
Path Revenues

#### Versus

Track access charges  
+ incentives

### BOT for train operations

#### Risk on

Passengers Traffic  
Track access charges

#### Versus

Passengers revenues  
Competition





## Management of stations



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## OPEX: How to optimize them?





## Track 201

### OPEX list:

- 1) Rolling stock maintenance and cleaning
- 2) Infrastructure maintenance
- 3) Commercialization, marketing, branding, ticket issuing & seat reservation
- 4) Energy
- 5) Station operations and maintenance
- 6) Drivers
- 7) Conductors (train inspectors) & on-board services
- 8) Overheads and Miscellaneous

### OPEX drivers:

- Travel time
- Distance
- Speed
  
- Labor costs
- Energy cost



## How much is speed?



### Track 201

**Fixed OPEX:**

**65%\***

- Overheads
- Commercialization
- Communication
- Operations in stations
- Operations of infrastructure
- Maintenance of earthworks
- Maintenance of tunnels
- Maintenance of viaducs and other structures
- Maintenance of security installations
- Training of staff
- Maintenance of the car bodies
- ...

**OPEX increasing with speed:**

- Energy (most part of it)
- Track maintenance
- Maintenance of the energy supplying system (most part of it)
- Maintenance of the rolling stock (most part of it)
- ...

**25%\***

**OPEX decreasing with speed:**

- Driving
- Conducting
- On board services
- Maintenance of the rolling stock (small part of it)
- ...

**10%\***

\* As a proxy and variable with the corridor and the country



**What revenues are at stake?**



**Main parameters:**

- Air competition and road competition
- Elasticity of traffic to travel time
- Level for fares
- Revenue management system



Track 201

# Honor the past and Imagine the future





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**Be ambitious**







**Thank you for your attention**

