

Talgo

AVRIL

The Future of High Speed by Talgo has arrived!



Talgo
Avril



AVRIL: RESULT OF TALGO HS STRATEGY

HS product portfolio: focus on high speed segment

Talgo strategic approach focused on HS since 1989

Traction scope integration since 2000

Long experience in HS passenger coaches

Talgo is HS constructor leader
Biggest fleet of VHS and HS train-sets in Spain (Worldwide reference as HS model)

Talgo global integrator



Talgo 350 – 330 km/h



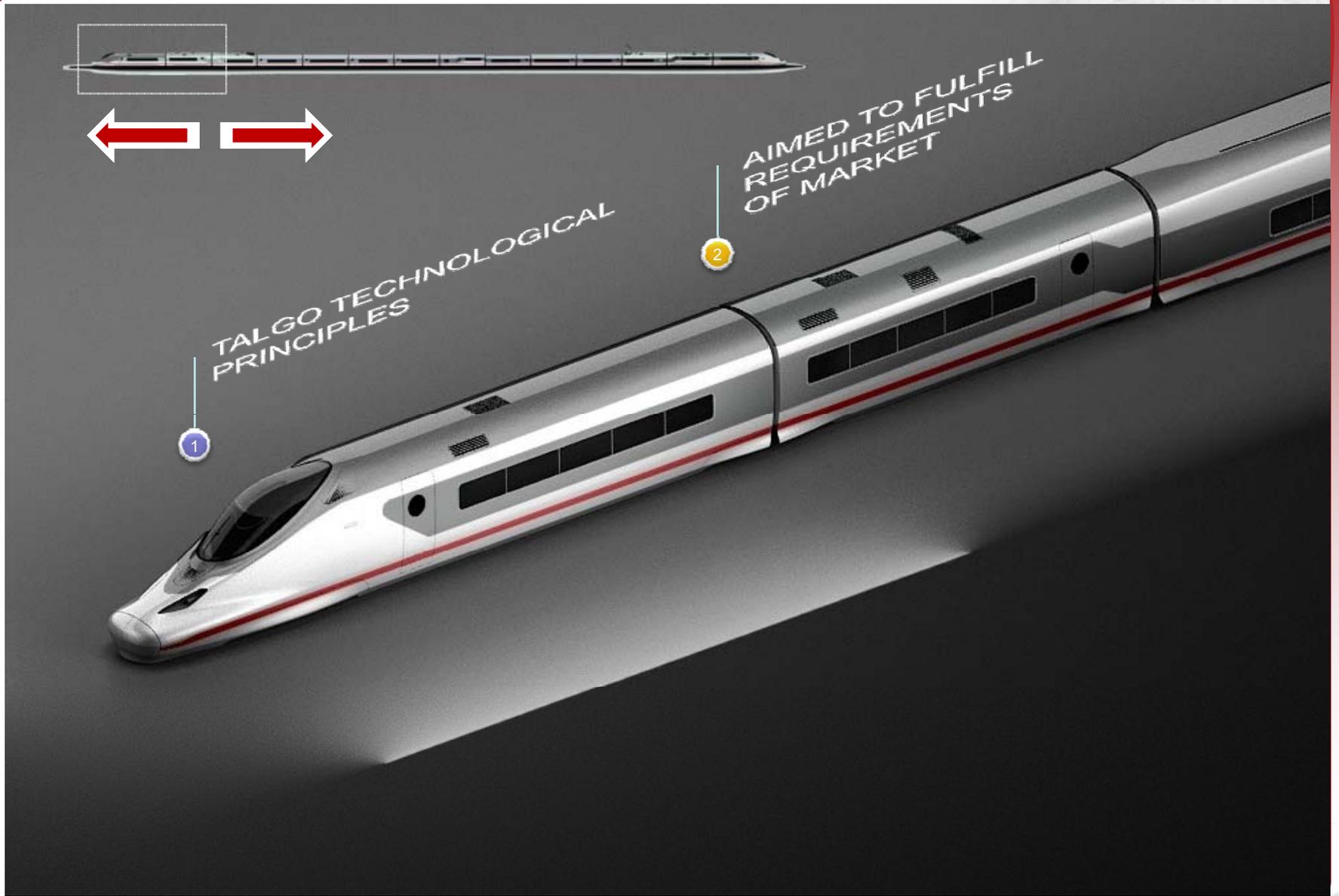
TRAVCA – 250km/h



Talgo 250 – 250 km/h



Talgo XXI – 220 km/h



1- TALGO TECHNOLOGY

- ✓ AVRIL is based upon the Talگو technical principles allowing:
 - ✓ Optimal Accesibility
 - ✓ Lower energy consumption
 - ✓ Lower emission of CO₂
 - ✓ Lower acoustic emissions to the outside
 - ✓ Lower acquisition and maintenance costs

- ✓ AVRIL introduces a new concept wich benefits from the advantages of the concentrated and distributed tractions:
 - ✓ High acceleration and brake performance
 - ✓ High capacity
 - ✓ Very high speed: maximum speed: 380 km/h

2. AVRIL: Focused on future market demands

Customer Requirements

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graph TD; A[Customer Requirements] --> B[ECONOMY]; A --> C[OPERATION]; A --> D[SERVICE];
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The diagram illustrates the relationship between customer requirements and three key operational areas. At the top, a grey box labeled 'Customer Requirements' has three red arrows pointing downwards to three separate grey boxes: 'ECONOMY' on the left, 'OPERATION' in the center, and 'SERVICE' on the right.

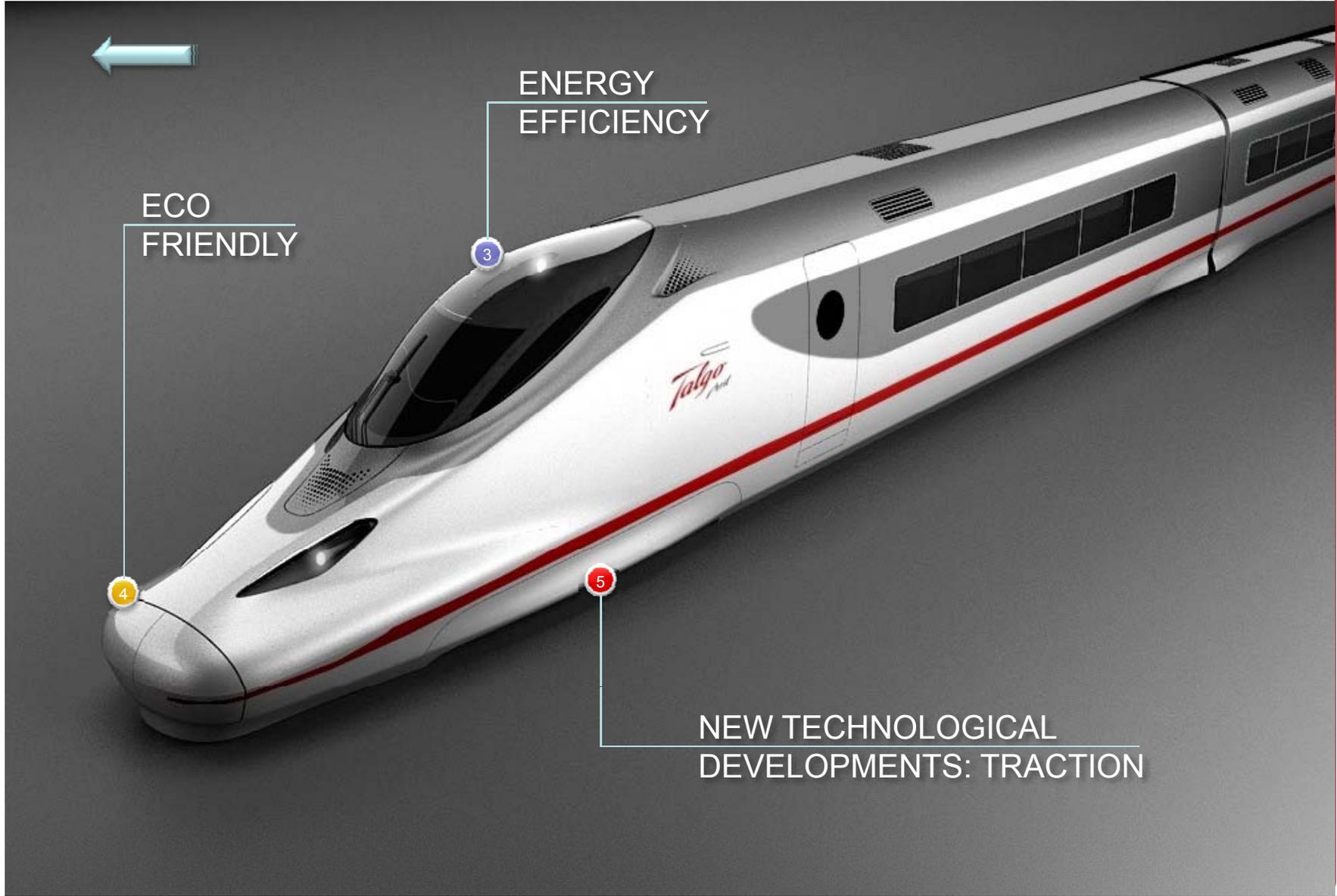
ECONOMY

OPERATION

SERVICE

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ENERGY
EFFICIENCY

ECO
FRIENDLY

NEW TECHNOLOGICAL
DEVELOPMENTS: TRACTION

3. ENERGY EFFICIENCY



Minimum Energy Consumption and High Capacity

- Minimum weight
- Optimal aerodynamic drag
- Best-in-class eco-friendly train

AVRIL Talgo

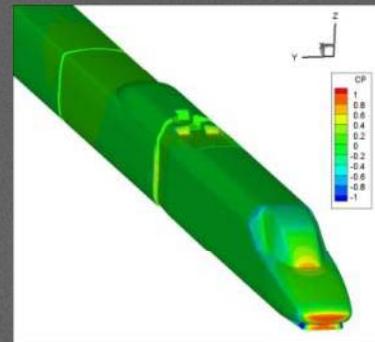
Weight (t)	315
Aerodynamic Coeff (daN/(km/h) ²)	0.038
Energy Consumption (kWh/km)	12.4

3. ENERGY EFFICIENCY

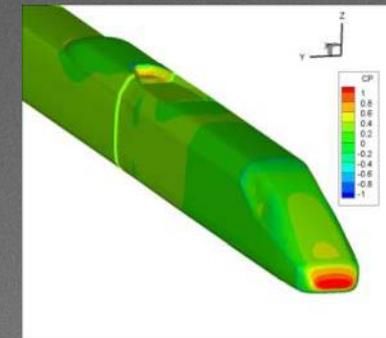
- The Talگو 350 (S-102) is the train in its category that consumes less energy per km (13.8 kWh/km).
- Designing the AVRIL involved the challenge for reducing this consumption even further:
 - - 7% per kilometre
 - - 31% per seat/kilometre

✓ Identified areas for optimization of aerodynamic coefficient (by comparison to current T350 train)

✓ Up to 21% total reduction of aerodynamic coeff.



Talگو 350 (S-112)



Talگو AVRIL

4. ECO-FRIENDLY

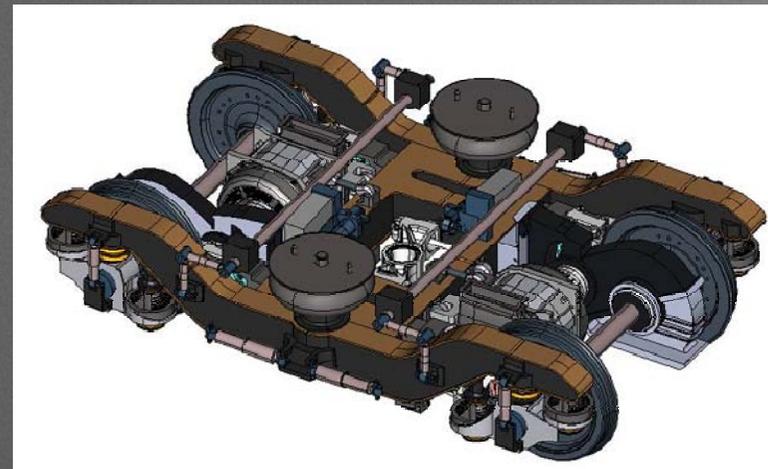
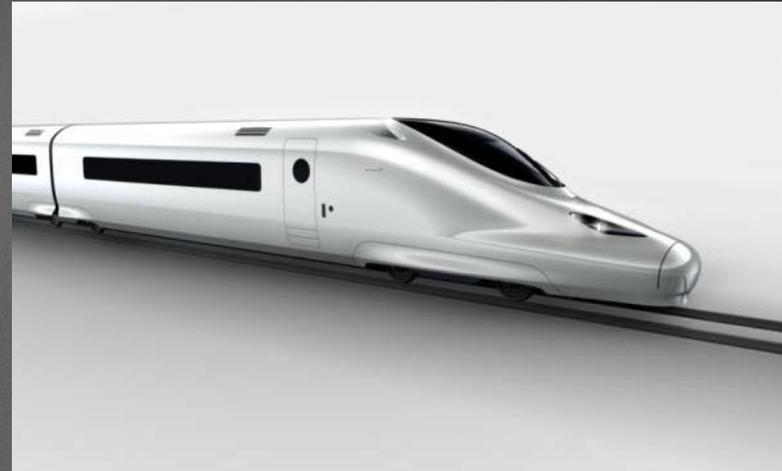
- Avril is designed with an aim to reduce environmental impact after product end of life
- Talgo works in improving recyclability of Avril.
- Criteria taken into account at the Design phase such as:
 - Connection technology optimization
 - Choice of material compatibility optimized
 - Building structure (reduction of pre-dismantling times)
 - Tool choice optimized
- Talgo actively participates in the UNIFE LCA technical group developing a Recycling Guideline for the Industry

5. NEW TECHNOLOGICAL DEVELOPMENTS : TRACTION

- Total power: 10 MW.
- Designed for:
 - 25 kV/ 50Hz
 - 15 kV/16.7 Hz
 - 3kV CC
 - 1.5 kV CC

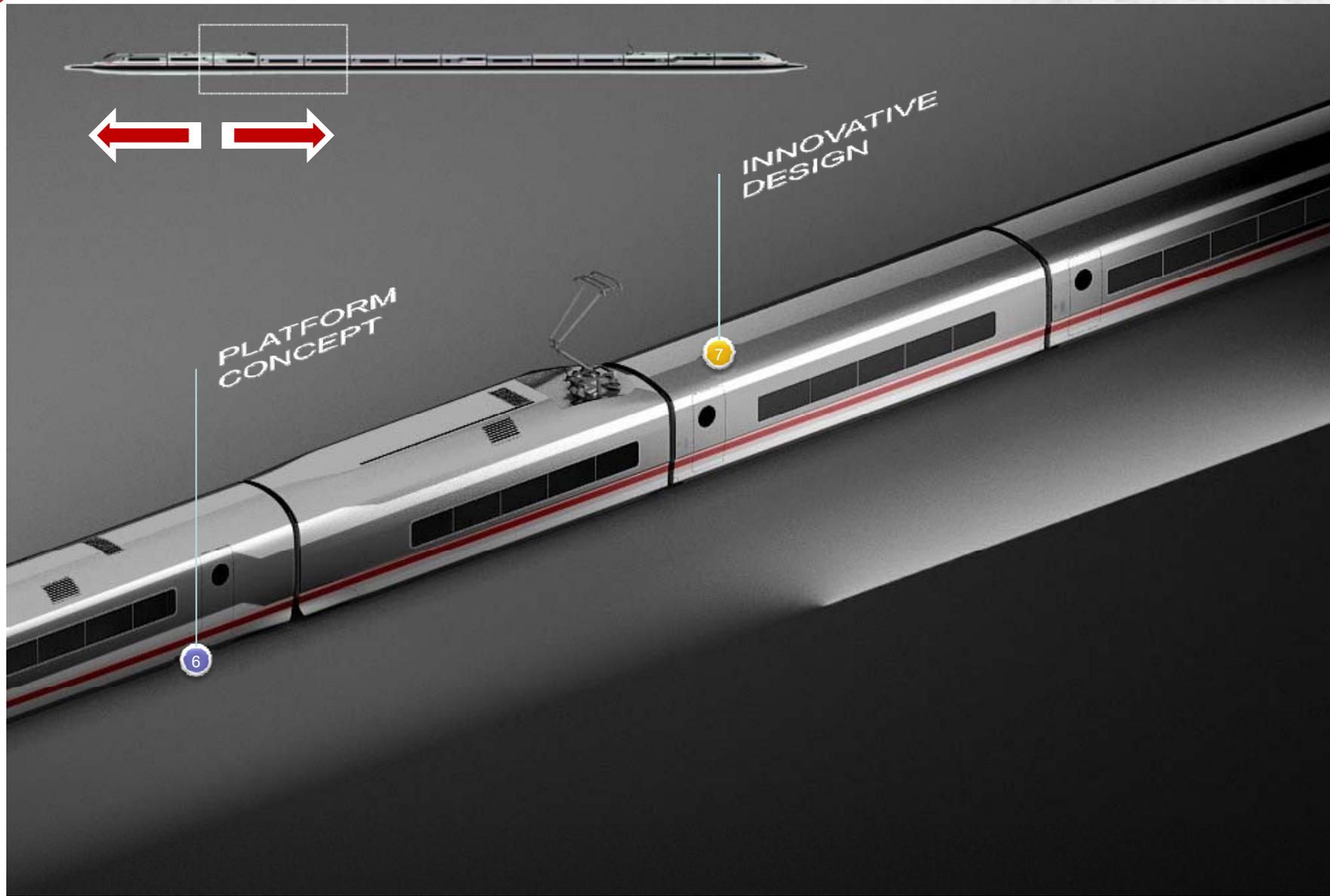
AVRIL introduces a new concept that brings together the advantages of concentrated traction and distributed traction:

- ✓ 42% motorized axles (high powered acceleration and braking).
- ✓ 87% of the train length can be used for passengers and services (high capacity).

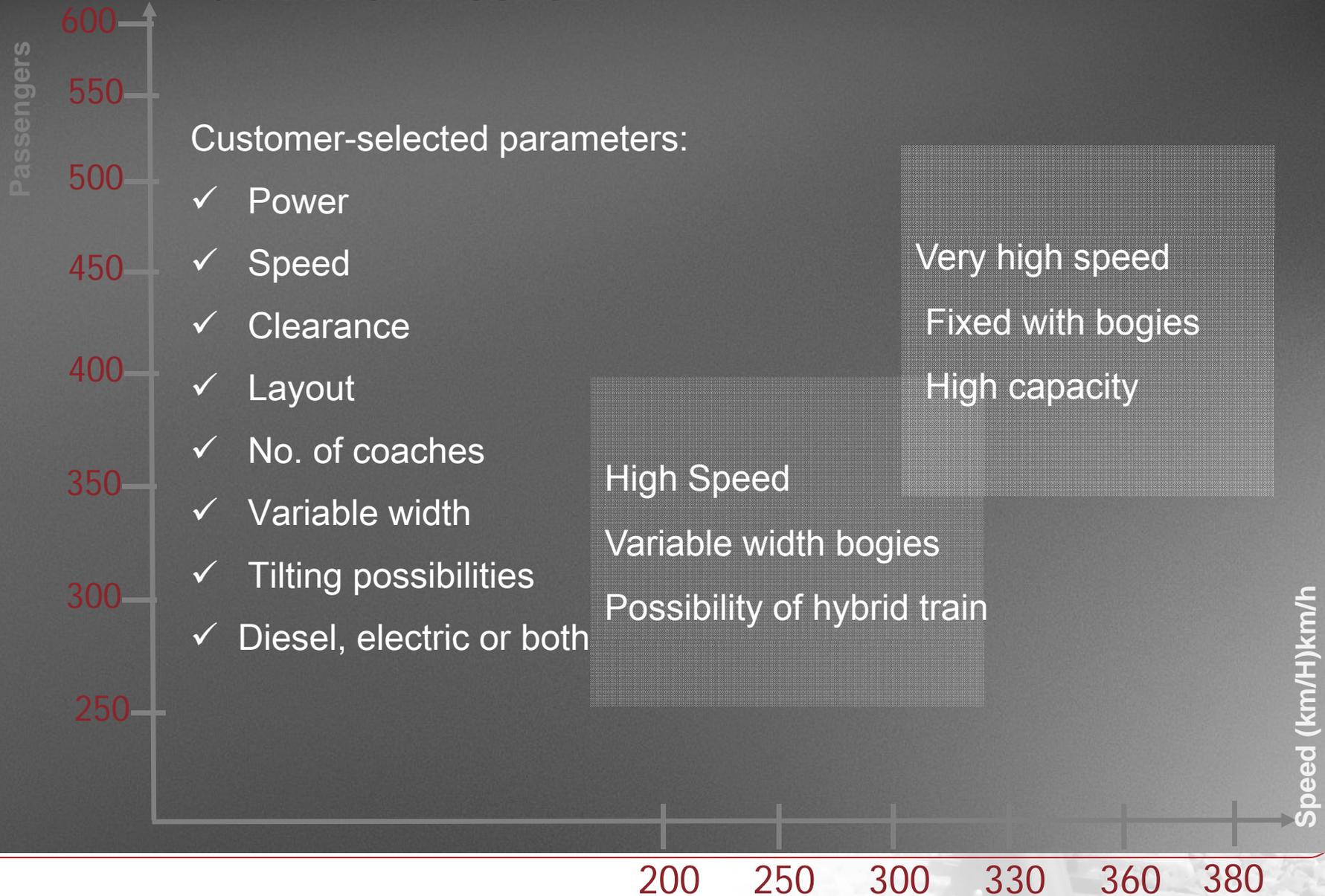


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6. PLATFORM CONCEPT



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- Objective: Interoperability train concept.
- Adaptable to any need: fulfilling worldwide needs:
 - Track gauge: 1.435 mm, 1.520 mm or 1.668 mm.
 - Versions with fixed gauge and with automatic track gauge change ($V < 300$ km/h)
 - Traction system designed for 4 tensions
 - Possibility of standard (2.900 mm) and wide clearance (3.200 mm).

7. INNOVATIVE DESIGN



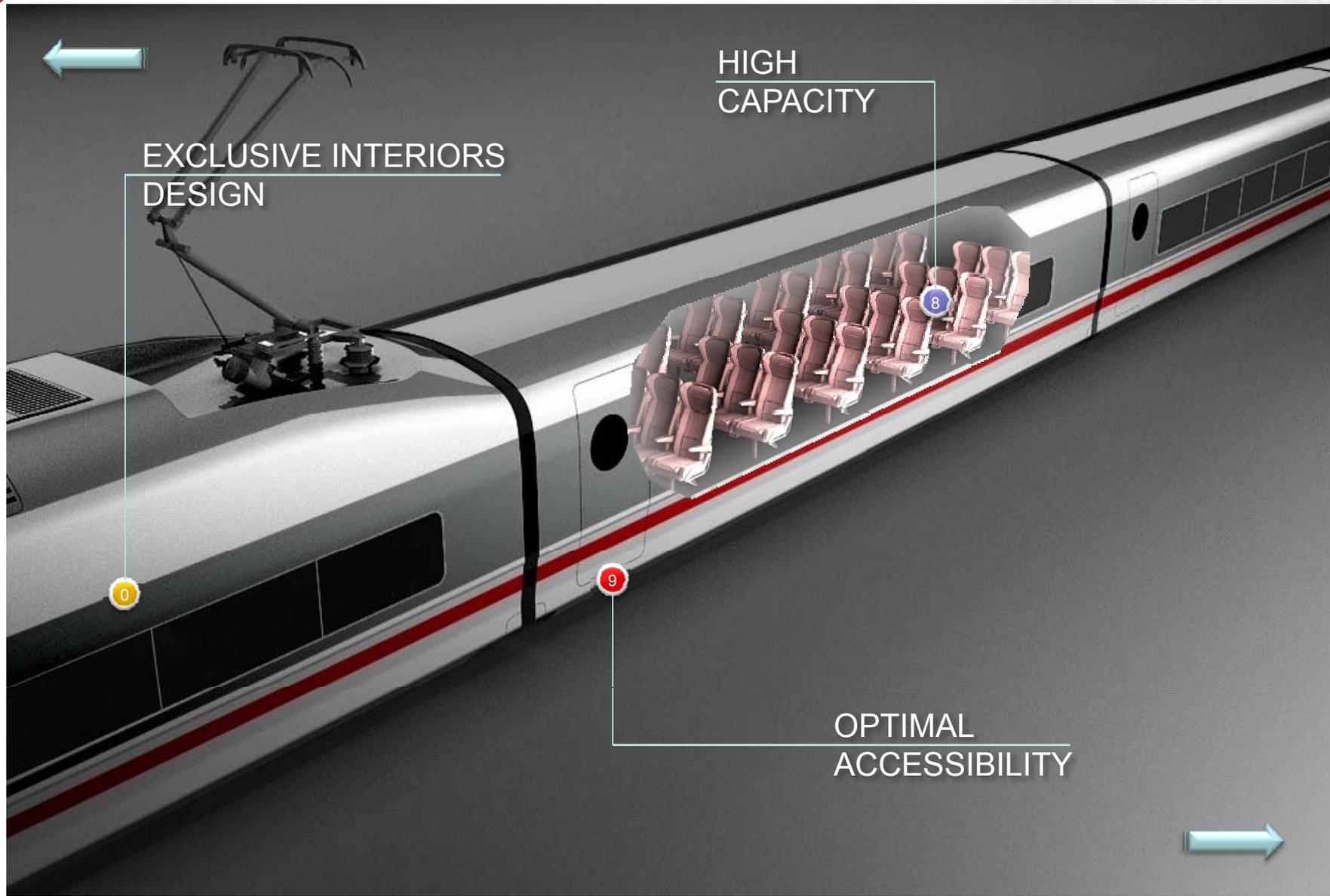
Talgo
Avril

The Exterior:

- Design by Pininfarina
- Best aerodynamics
- Exclusivity

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EXCLUSIVE INTERIORS
DESIGN

HIGH
CAPACITY

OPTIMAL
ACCESSIBILITY

8. HIGH CAPACITY

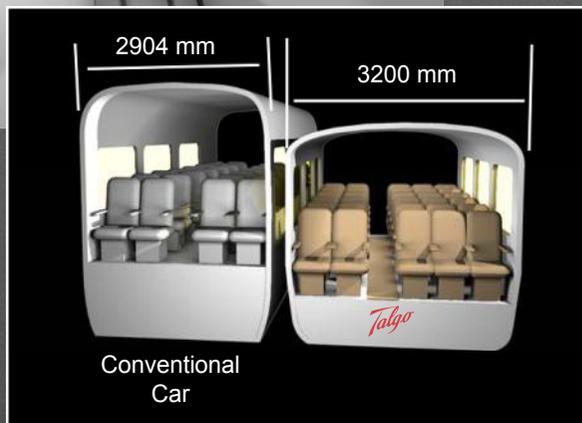
Maximum height: 5290 mm
Trade wide: 1455 mm



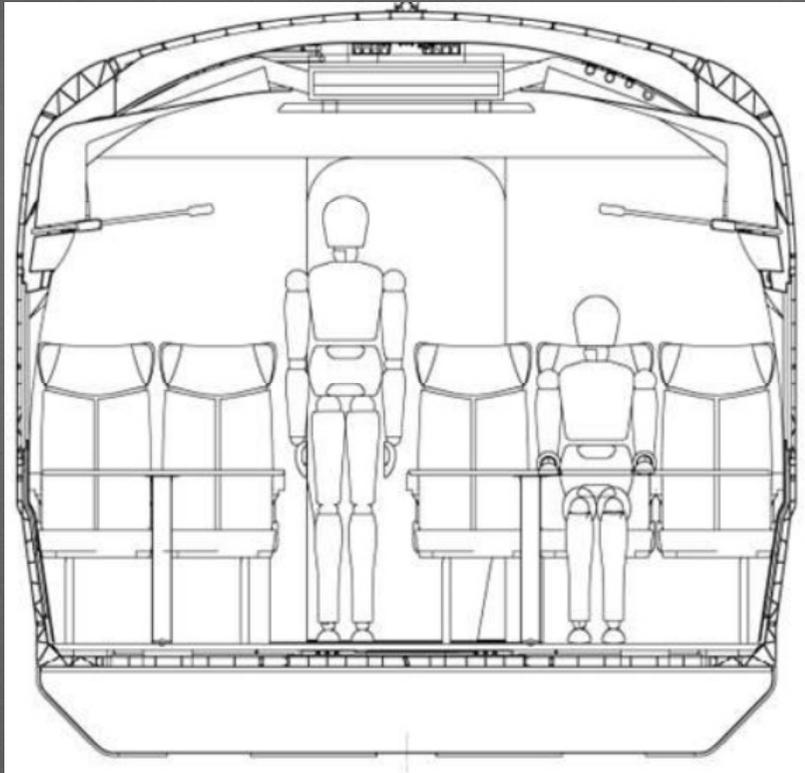
Maximum capacity on a single deck configuration.

A unique solution:

- **3,200 mm wide car:**
Greater interior space and comfort
- **3+2 configuration (tourist class):**
Greater flexibility in operation
Maximum capacity on a single deck configuration



8. HIGH CAPACITY

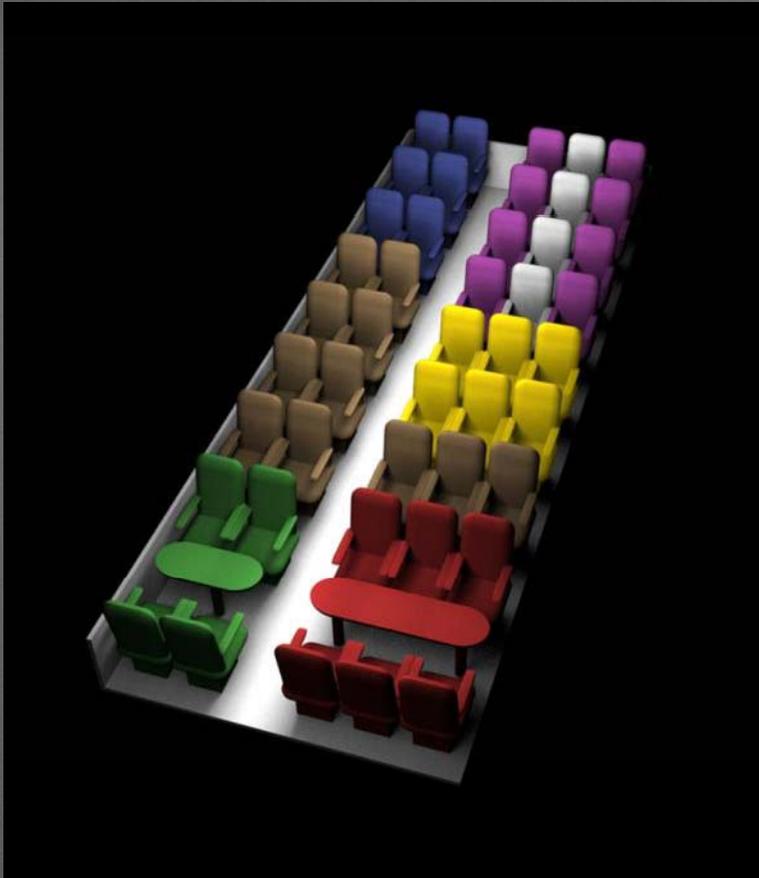


Talgo's pioneer and unique solution for a 3+2 seating configuration in UIC clearance gauge

AVRIL offers high capacity, taking maximum advantage of space:

- Its 200 m long version and standard clearance has an approximate capacity of:
 - ❑ Standard configuration > 500 seats
 - ❑ High density configuration > 600 seats

8. HIGH CAPACITY



Seat configuration adapted to all uses:

- Individual passengers
- Couples
- Groups of three
- Families or Groups of four
- Larger families or group of six
- Intermediate seat occupied only if load factor is over 80%

9. BEST ACCESSIBILITY



Best accessibility available in the market

- 100% low floor coaches
- Interoperable standard platform of 760 mm
- Maximum respect for people with reduced mobility
- Minimum passenger transfer time at station

10. EXCLUSIVE INTERIORS



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THANK YOU!