THE INTEROPERABILITY OF THE RAILWAYS AND THE INTEGRATION OF TECHNOLOGIES IN THE SPANISH RAILWAY

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The railway is the only way of transport with important technical limitations in his international movements

- Limitations by track gauge
- Limitations by energy system
- Limitations by railway signalling
THE INTEROPERABILITY OF THE RAILWAYS

STI INFRAESTRUCTURE

STI ENERGY
THE INTEROPERABILITY OF THE RAILWAYS

STI CONTROL-COMMAND AND SIGNALLING

THE INTEROPERABILITY OF THE EUROPEAN RAILWAYS NEEDS TIME AND ECONOMIC RESOURCES

STI ROLLING STOCK
HIGH SPEED LINES

- Electric tension: 25,000 volt
- Track gauge: 1,435 mm
- Railway signalling: ERTMS

CONVENTIONAL LINES

- Electric tension: 3,000 volt
- Track gauge: 1,668 mm
- Railway signalling: ASFA
✓ THIRD RAIL / TRAINS VARIABLE GAUGE

✓ TRAINS BI-TENSIÓN

✓ ERTMS
THIRD RAIL

TARDIENTA-HUESCA
TALGO TECHNOLOGY SINCE 1969

VARIABLE GAUGE
CAF TECHNOLOGY SINCE 2.000

VARIABLE GAUGE
SEÑAL DE CAMBIO DE TENSION

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BITENSIÓN TRAINS

POWER TRAINS:
DIESEL + 3.000 VOLT + 25.000 VOLT
Length of sections in commercial service equipped with ERTMS: 957 km
Trains in commercial service with equipped with ERTMS: 135 trains
ERTMS SUPPLIER

SIEMENS
BOMBARDIER
ANSALDO
ALSTOM

ANSALDO
THALES
INVENSYS

Circuito de Vía
ETCS
Detector
Baliza de Información Variable
Baliza de Información Fija
LEU
IDENTITY OF DE SPANISH RAILWAYS

ADAPTABILITY

INNOVATION

INTEGRATION OF TECHNOLOGY

THANK YOU FOR YOUR ATTENTION!