

MOVING TOWARDS A SUSTAINABLE MOBILITY

BUILDING A SMART ENVIRONMENT AND USER-FRIENDLY INTEGRATED MOBILITY SYSTEM

DIGITALIZATION AND THE CHALLENGES OF INNOVATION

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ABOUT US

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BUILDING A SMART ENVIRONMENT AND USER-
FRIENDLY INTEGRATED MOBILITY SYSTEM



INFRAESTRUTURAS DE PORTUGAL is the Portuguese public company responsible for the management of road and railway infrastructures that results from the merger between the Portuguese companies REFER and EP.



Led by Infraestruturas de Portugal, the IP Group operates within a rationale that is aimed at promoting multimodal mobility, ensuring the provision of safe, efficient and sustainable services.

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IP's major operations regard the design, project, construction, financing, conservation, exploitation, re-qualification, expansion and modernisation of national road and rail networks.



IP Engenharia has extensive experience in providing technical assistance programs and transport engineering consulting.

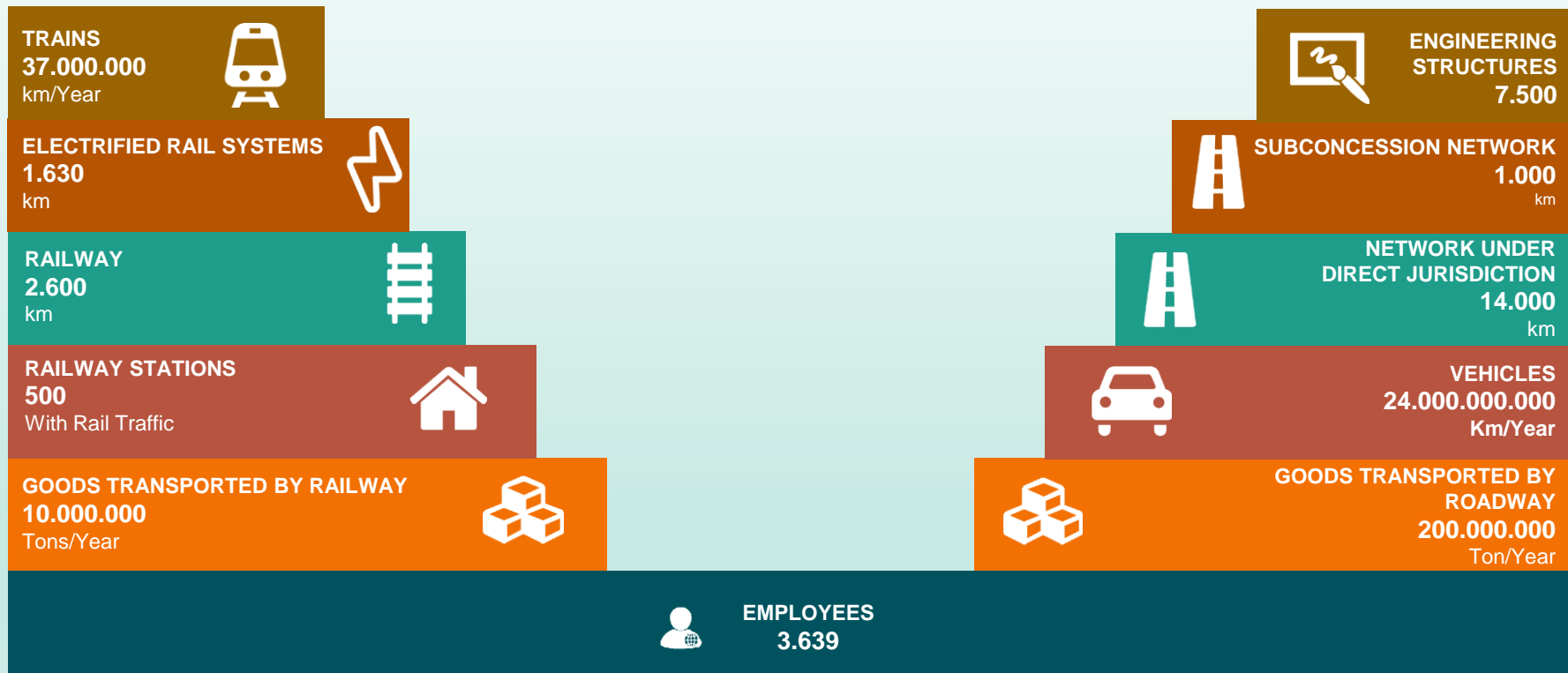


IP Património is the company responsible for the integrated management of road and railway assets.



IP Telecom is a Telecommunications Operator as well as a Data Centre and Cloud Computing services provider.

OUR NUMBERS



BUILDING A SMART AND USER-FRIENDLY INTEGRATED MOBILITY SYSTEM ENVIRONMENT

DIGITALIZATION AND THE CHALLENGES OF INNOVATION



BUILDING A SMART ENVIRONMENT AND USER-FRIENDLY INTEGRATED MOBILITY SYSTEM

DIGITALIZATION AND THE CHALLENGES OF INNOVATION

JUST TO REMEMBER

Some Transportation Inefficiencies

- **Polution**

(25% of global polution)

- **Accidents and fatalities**

(EU -> 26000/year)

JUST TO REMEMBER

Some Transportation Inefficiencies

- **Transportation cost/pax**
Capacity used
- **Energy Inefficiency of vehycles**
Road Sector

JUST TO REMEMBER

Some Transportation Inefficiencies

- Inefficient Travel Offer

Modal approach versus
integrated Offer

- Land Occupation

.....

WE ARE REALLY INEFFICIENT!

WE MUST CHANGE AND IMPROVE

OUR PERFORMANCE

BECAUSE WE LIVE IN A COMPLEX AND INTELLIGENT WORLD



TODAY WE DISCUSS

SMART CITIES

SMART MOBILITY

SMART ENVIRONMENT

SMART ECONOMY

SMART LIVING

SMART GOVERNANCE

SMART HEALTH

■

EVERYTHING IS SMART? NO!

WE NEED

A DISRUPTIVE AND DIGITAL APPROACH

LET'S FACE THE



WITH AMBITION

Promoting/Managing

- . Automation and Digital Connectivity**
- . Sensors everywhere**
- . IoT**
- . Opening the Data -> Big Data**

Promoting/Managing

Intelligent Public Transports

Integrated and Modal Complementarity

Mobility as a Service

Optimized Transportation Services

Sharing Strategies with digital support

BEING DIGITAL AND



Connected

TO

FACE THE DIGITAL CHALLENGE EFFICIENTLY

Some Axles of implementation

- . Connected road vehicles**
- . Connected trains**
- . Connected infrastructures**
- . Smart Interfaces**
- . High levels of automation**
- . Driverless Vehicles**
- . Optimized trips via analytics**

FACE THE DIGITAL CHALLENGE EFFICIENTLY

Some Axes of implementation

- . Biometric control**
- . PRM Digital support**
- . Integrated ticketing and payment solutions**
- . Tele-information**
- . Tele-security**
- . Tele-maintenance**
- . Tele-marketing**

MANAGING INFRA TOWARDS THE FUTURE

Promoting:

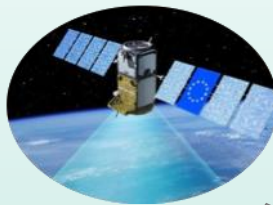
- . Integrated and digital approach to transportation and cities management
- . Predictive Asset management and maintenance based on sensors
- . New communication management systems
- . New energy systems
- . Open Data
- .

MANAGING INFRA TOWARDS THE FUTURE

COMMUNICATIONS



NAVIGATION



ANALYTICS



COMPUTING



WORKING ON

- New generation network services in public mobile networks create new possibilities for rich and empowering applications. Network coverage and standardization are also relevant factors.

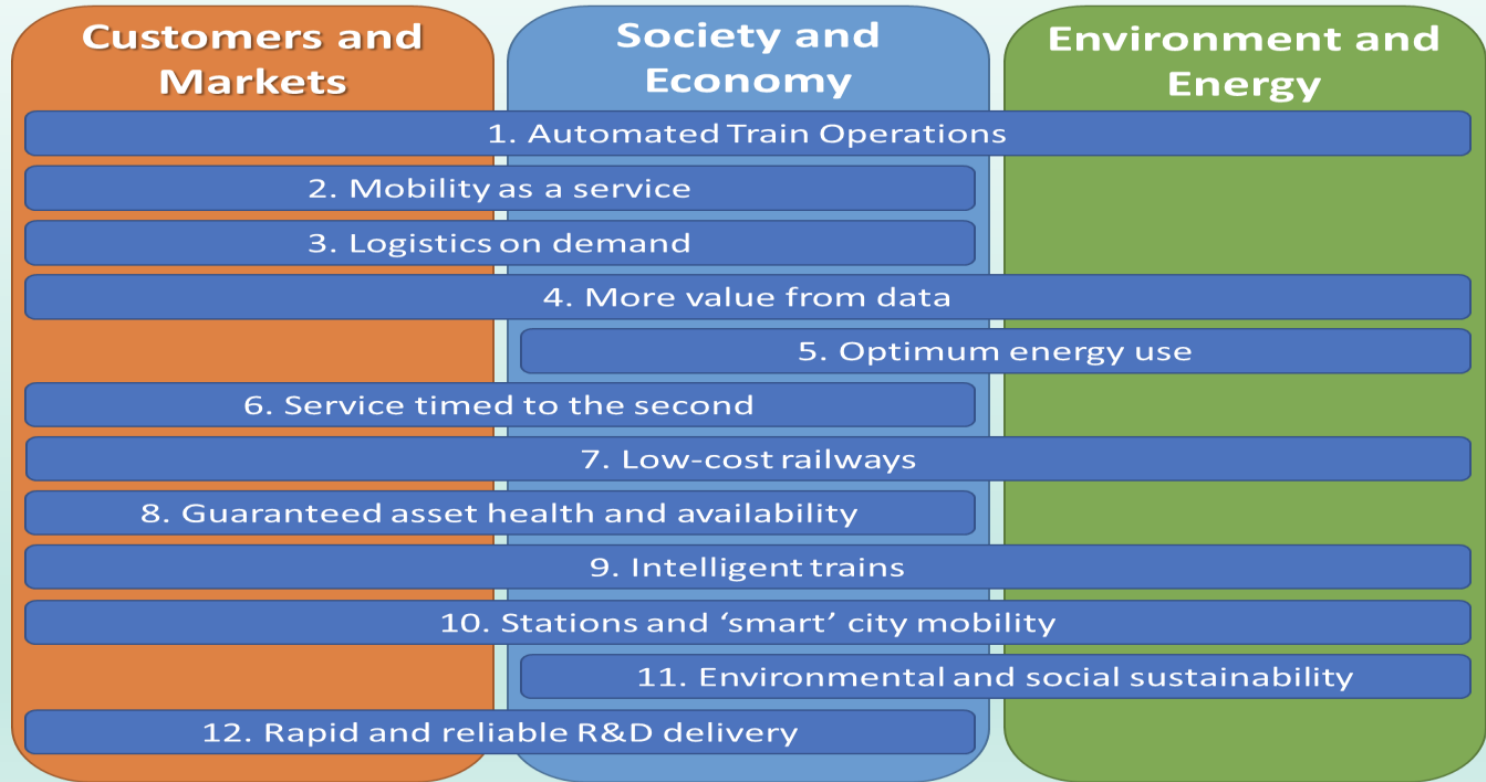
- Satellite Navigation allows positioning to become a part of every navigation system. The deployment of GALILEO and the inclusion of integrity is crucial for transport management.

- As sensor and business data grows, Big Data and Business Intelligence tools transform data into actionable information. Forecasting and planning are the main areas of application.

- Mobile computing has evolved, allowing user apps to provide complex services and the Internet of Things with almost unlimited applications using low cost connected hardware.

IMPROVING RAILWAYS TOWARDS THE FUTURE

WORKING ON 12 CAPABILITIES



SOME FUTURE CHALLENGES

Electric Trucks



SOME FUTURE CHALLENGES

Automated Trucks

Daimler Trucks establishes global organization
for highly automated driving



New unit to implement Daimler Trucks' effort to put highly
automated trucks (SAE Level 4) onto roads within a decade.

SOME FUTURE CHALLENGES

Automated Trains



← ATO
↓



SOME FUTURE CHALLENGES

Driverless Cars



Autonomous Cars



SOME FUTURE CHALLENGES

DISRUPTIVE TECHNOLOGIES

Self-Driving Air Taxi (Airbus)

Jetpacks (personal flying device – Boeing)

Pilotless Pods - hyperloop



SOME KEY FINAL MESSAGES

**AN INTEGRATED STRATEGIC PLANNING ON
TRANSPORTATION IS CRUCIAL TO MAXIMIZE
ECONOMIC EFFICIENCY**

SOME KEY FINAL MESSAGES

**THE FUTURE WILL BE BASED ON
ALGORITHMS AND DIGITAL USE**

**PLANNING CAN NOT BE ONLY PHYSIC, BUT ALSO
DIGITAL, AND BOTH MUST BE INTEGRATED**

SOME KEY FINAL MESSAGES

**IM'S AND TO'S WILL MANAGE A VAST AMOUNT OF DATA
(BIG DATA) GENERATED FROM THE ACTIVITY DEVELOPED
USING MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE**

OPEN DATA IS NEEDED

SOME KEY FINAL MESSAGES

**DIGITAL AND IOAT WILL BE CRUCIAL TO TRANSPORTATION
SERVICE PROVIDERS' ACTIVITY**

**TRANSPORTATION SYSTEM WILL BE
BASED ON DIGITAL AND
CYBER VULNERABILITY WILL INCREASE**

AND



WE CAN'T FORGET



WE MUST BE SAFE AND SECURE

WE SHALL NOT FEAR THE FUTURE

BUT BE AWARE, RESILIENT AND PREDICTIVE

LET'S FACE THE FUTURE WITH VISION AND AMBITION

Rodovia e Ferrovia.
Juntos encurtamos distâncias.

Viva a mobilidade.

THANK YOU

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