European rail "nextgen" backbone of sustainable and smart mobility and transport
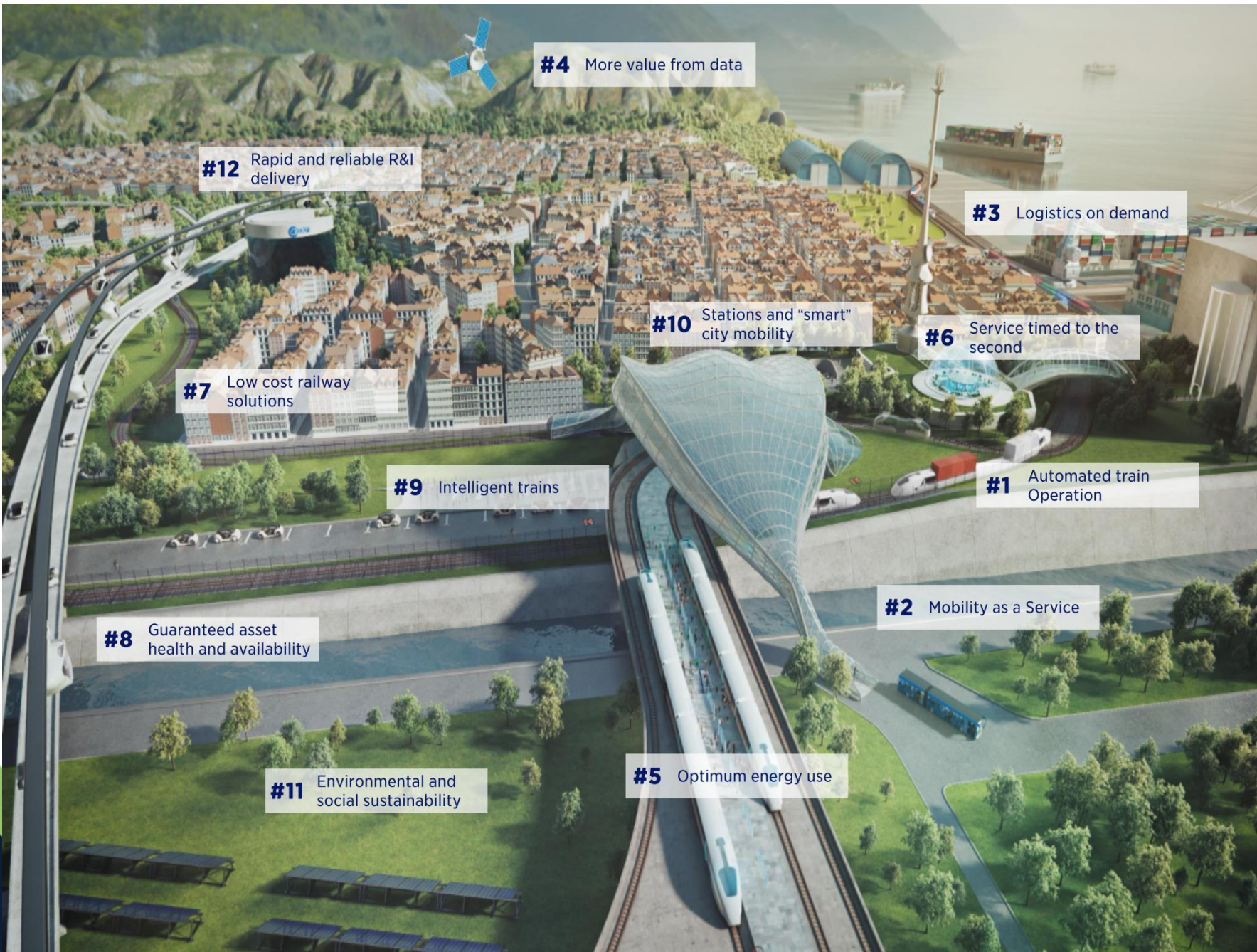
17 November 2022

carlo m borghini

Executive Director

#4 More value from data

#12 Rapid and reliable R&I delivery

#3 Logistics on demand

#10 Stations and "smart" city mobility

#6 Service timed to the second

#7 Low cost railway solutions

#9 Intelligent trains

#1 Automated train Operation

#2 Mobility as a Service

#8 Guaranteed asset health and availability

#11 Environmental and social sustainability

#5 Optimum energy use

INNOVATION CAPABILITIES

USER FIRST

EASY

INTEGRATED

PERSONALISED

Europe's Rail

Europe's Rail: Vision

European Green Deal

EU policy priorities

An economy that works for people: New Industrial Strategy

A Europe fit for the digital age: Shaping Europe's Digital Future

Europe in the world

Sustainable and Smart Mobility Strategy

EU-RAIL VISION

To deliver, via an integrated system approach, a high capacity, flexible, multi-modal, sustainable and reliable integrated European railway network by eliminating barriers to interoperability and providing solutions for full integration, for European citizens and cargo.

CAPACITY INCREASE	OPERATION RELIABILITY	REDUCE EMISSIONS	ENERGY EFFICIENCY	LCC REDUCTION	INCREASE PUNCTUALITY

EUROPE'S RAIL:
ONE INTEGRATED R&I PROGRAMME

DELIVER AN INTEGRATED EUROPEAN RAILWAY NETWORK BY DESIGN

DEVELOP A UNIFIED OPERATIONAL CONCEPT AND A FUNCTIONAL SYSTEM ARCHITECTURE FOR INTEGRATED EUROPEAN RAIL TRAFFIC AND CCS/AUTOMATION

DELIVER A SUSTAINABLE AND RESILIENT RAIL SYSTEM

DELIVER A COMPETITIVE, GREEN RAIL FREIGHT FULLY INTEGRATED INTO THE LOGISTICS VALUE CHAIN

DEVELOP A STRONG AND GLOBALLY COMPETITIVE EUROPEAN RAIL INDUSTRY

SYSTEM PILLAR

OPERATIONAL CONCEPTS

FUNCTIONAL SYSTEM ARCHITECTURE

A SINGLE COORDINATING BODY FOR THE WHOLE SECTOR EVOLUTION

OPEN INTERFACES TO OTHER TRANSPORT MODES AND BUSINESSES

SYSTEM REQUIREMENT SPECIFICATIONS

INNOVATION PILLAR

TECHNOLOGICAL AND OPERATIONAL SOLUTIONS FOR SERVICES OF FUTURE

FLAGSHIP PROJECTS

LARGE-SCALE DEMONSTRATIONS

EXPLORATORY AND FUNDAMENTAL R&I

1 EUROPEAN RAIL TRAFFIC AND MOBILITY MANAGEMENT
- Manage and improve rail traffic at EU level
- Adjust rail traffic management in function of the mobility demand

2 DIGITALISATION & AUTOMATION IN TRAIN OPERATIONS
- ATO implementation
- Digital train operations

3 SUSTAINABLE AND DIGITAL ASSETS
- Integrated assets testing & life-cycle framework
- Zero-emmission, silent rail system

4 COMPETITIVE, DIGITAL, GREEN RAIL FREIGHT
- New digital customer interaction & innovative rail freight services
- Multimodal and rail freight innovation integration

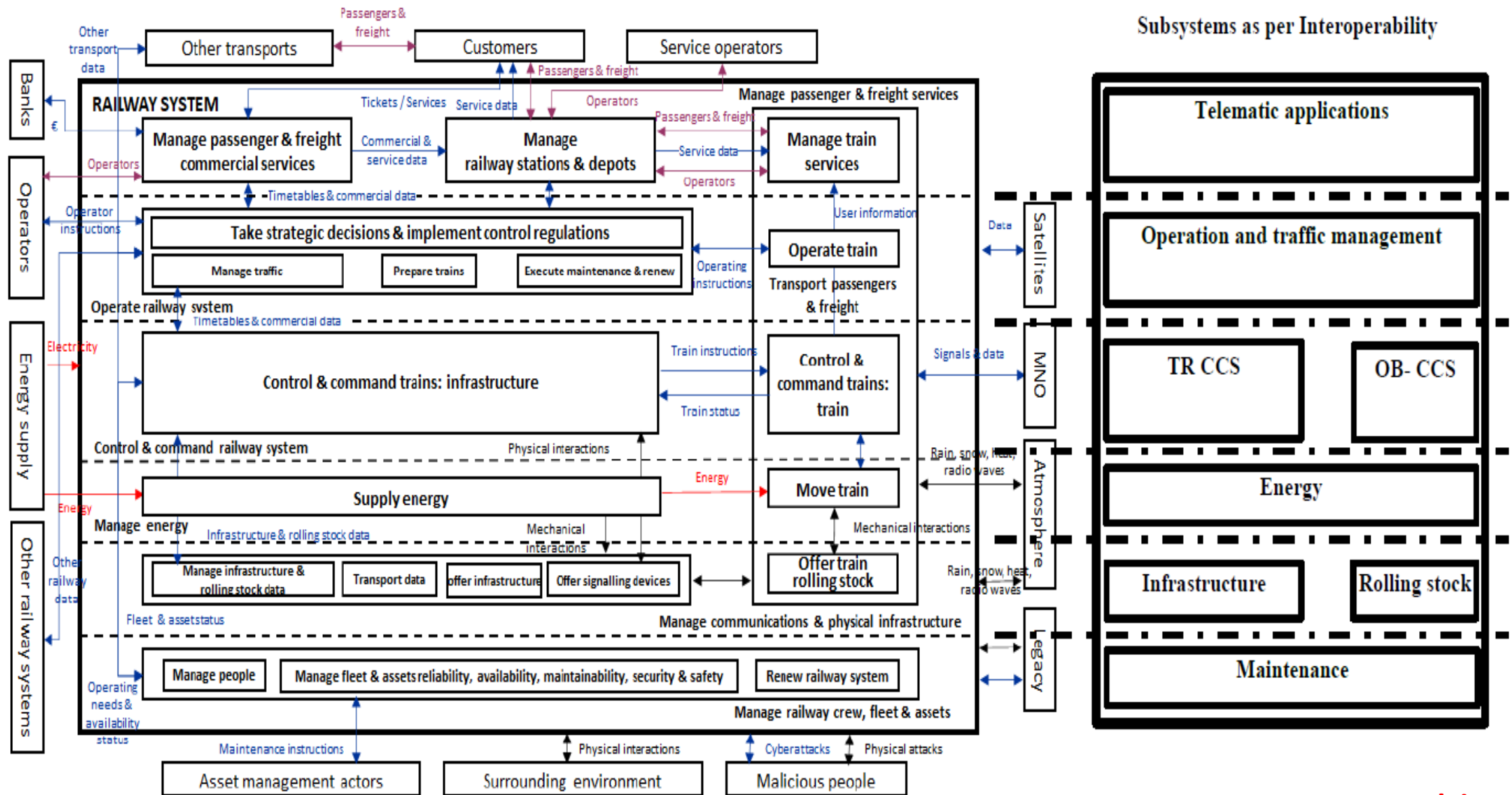**5 REGIONAL RAIL SERVICES IN LOW DENSITY AREAS**
- New system approach to regional rail services in low density areas

DEPLOYMENT GROUP

FUTURE SOLUTIONS DEPLOYED IN A COORDINATED AND CONSISTENT WAY AT EUROPEAN LEVEL, TAKING INTO ACCOUNT ALTERNATIVE ROLLOUT SCENARIOS, BEHAVIOURAL AND ORGANISATIONAL CHANGES, SYNERGIES WITH OTHER MODES OF TRANSPORT
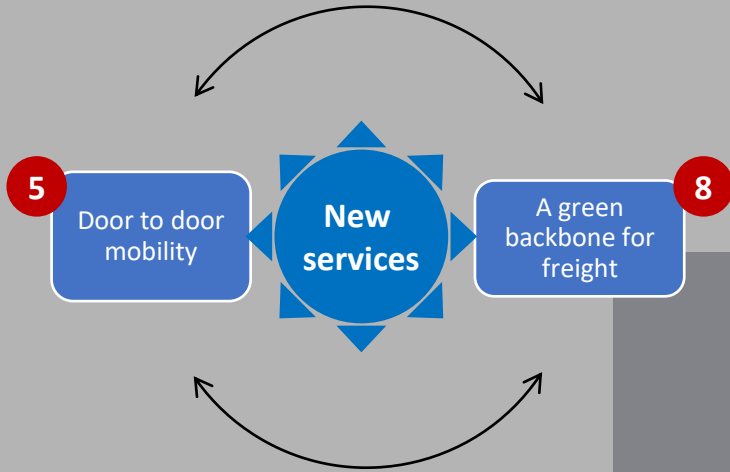
System Pillar
domains of the railway system and their alignment with sub systems
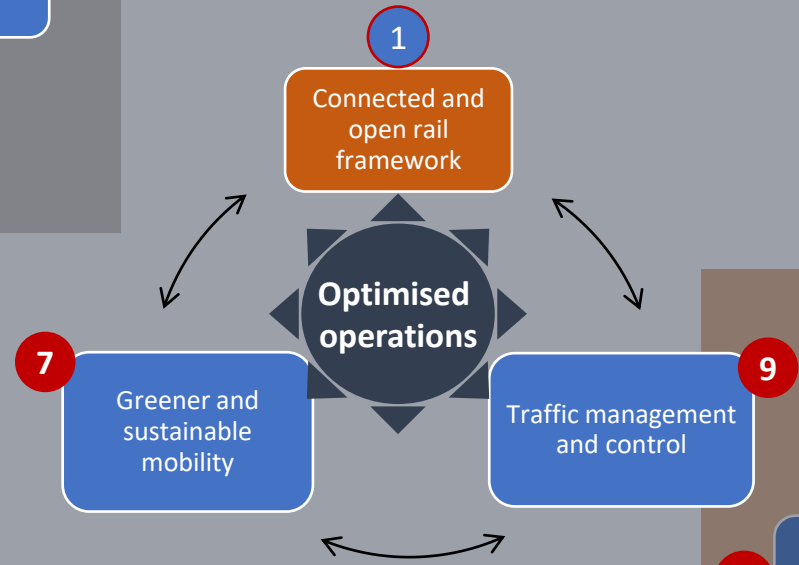

work in progress

Innovation Pillar

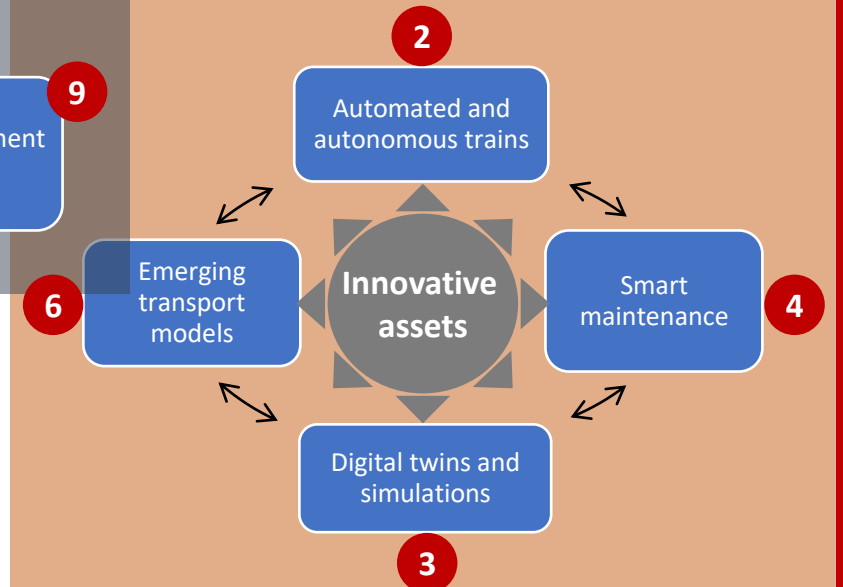objective: deliver multimodality

A coherent framework improves the system impact of R&I activities and ensures a one European integrated system

objective: Integrated European transport networks

objective: delivering European rail industry competitiveness

New services
5 Door to door mobility
8 A green backbone for freight

1 Connected and open rail framework

Optimised operations
7 Greener and sustainable mobility
9 Traffic management and control

Innovative assets
2 Automated and autonomous trains
4 Smart maintenance
6 Emerging transport models
3 Digital twins and simulations

Large scale demonstrations accelerate opportunities for better services, operations and assets

Key Performance Indicators of the Shift2Rail Programme

CAPACITY INCREASE	OPERATION RELIABILITY	REDUCE EMISSIONS	ENERGY EFFICIENCY	LCC REDUCTION	INCREASE PUNCTUALITY

SPD	LCC				Capacity				Punctuality			
Target	-50%				+100%				+50%			
High Speed	-19%	-20%	-15%	-18%	62%	62%	69%	74%	35%	35%	29%	19%
Regional	-36%	-37%	-21%	-24%	74%	74%	57%	49%	53%	53%	51%	15%
Metro	-18%	-18%	-16%	-18%	25%	25%	23%	28%	n/a	n/a	n/a	19%
Freight	-39%	-39%	-39%	-40%	94%	94%	42-114%	91%	57%	57%	78%	71%

release 3.2   release 2.0   release 1.0

Europe's Rail JU:

Rail Research and Innovation to Make Rail the Everyday Mobility

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