

# Innovation solution for a decommissioning strategy of the class B: the Italian path

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# Needs and Technologies: "Lasagna story"

- *Stratification over time* -

## Needs

Interoperability

Capacity

Speed

Safety



## Technologies

Ertms

Etc's L3/L2/L1

Electronic

Legacy Class B

Relais

Interlocking

# The Italian Rail Network - Needs

## Lines classification related to the traffic development

(6%)	~ 1000	High Speed Network	Command Control System : ERTMS/ETCS L2 Train spacing with radio block
(5%)	~ 950 km	Metropolitan Traffic Lines	Command Control System : CTC, SCC, SCC-M Train spacing with short block sections (High Capacity)
(18%)	~ 2.900 km	Fast Lines	Command Control System : CTC, SCC Train spacing with SCMT
(23%)	~ 3.900 km	Middle performances + Freight lines	Command Control System : CTCev, SCC Train spacing with block sections: SSC, SCMT
(48%)	~ 7.950 km	Subsidiary + Low Traffic Lines	Command Control System : CTC Train spacing with block sections: SSC

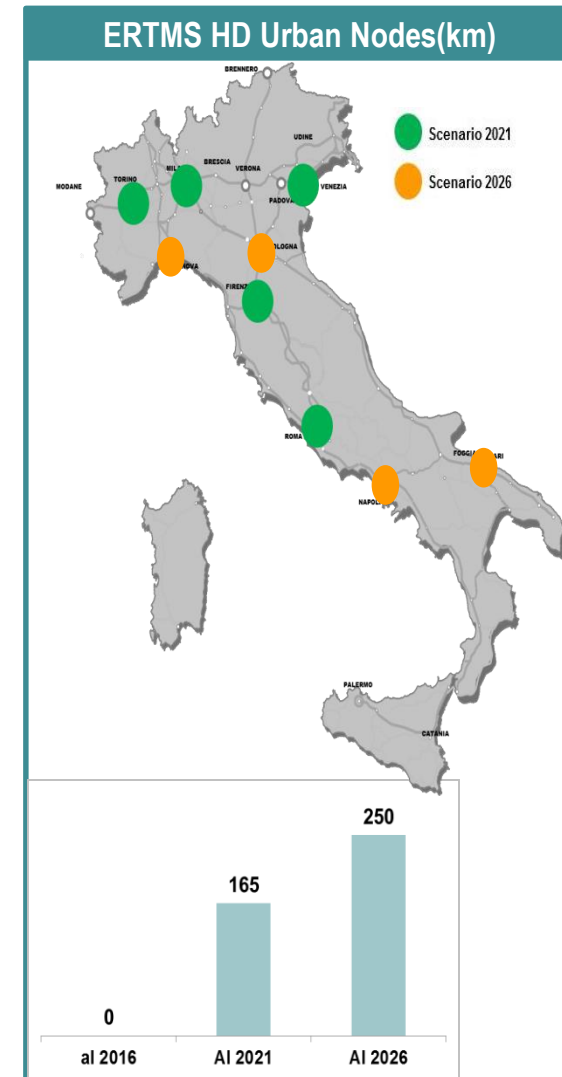
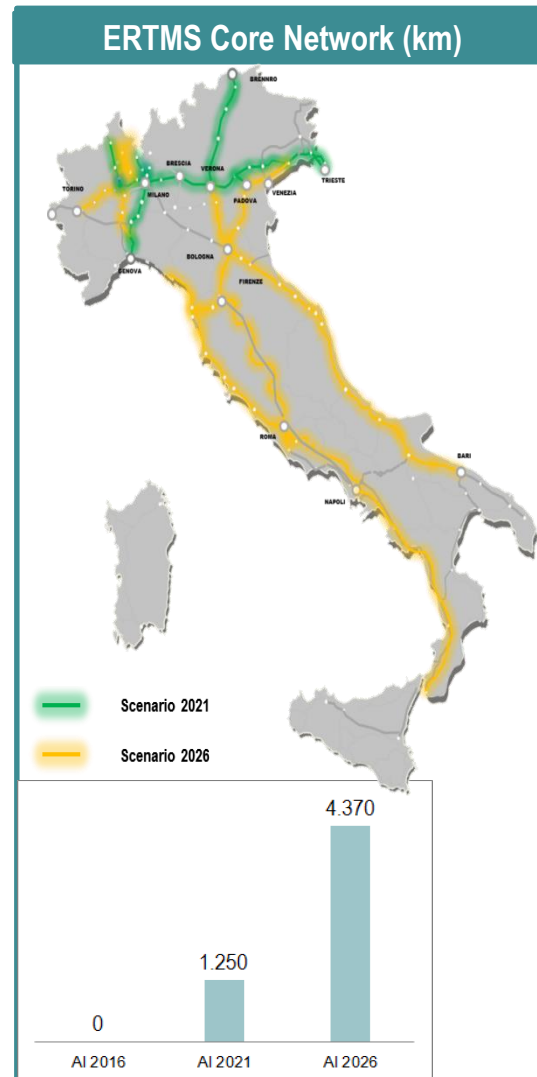
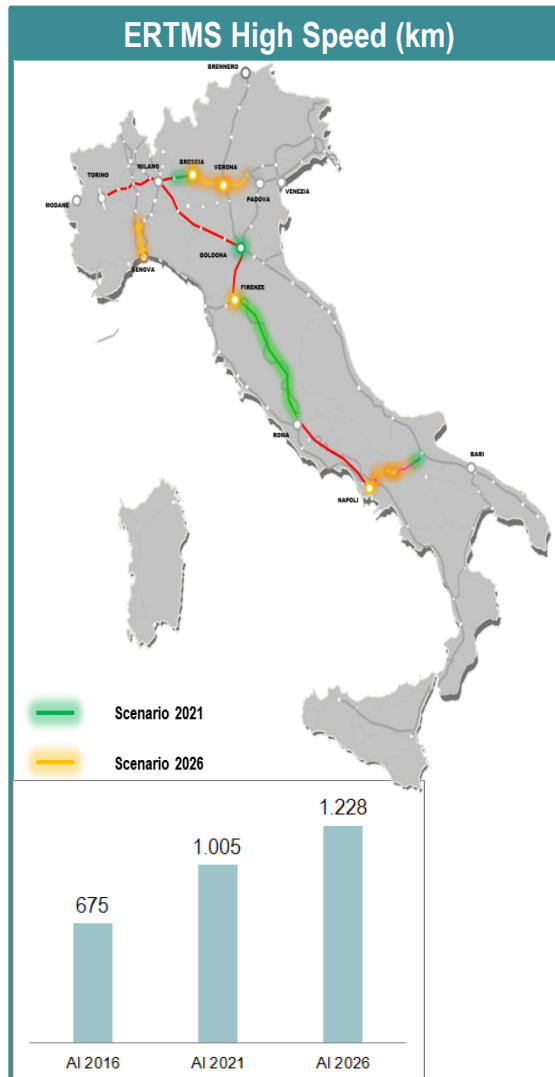
Speed/Interoperability

Increase capacity

Interoperability

Economic Sustainability

# ERTMS RFI Scenarios 2018-2021-2016





# ERTMS Portfolio in RFI



# RFI ERTMS Deployment Plan

## Description

The **ERTMS Deployment Plan on the RFI Network (last version on 15/06/2017 - rev.F)** has been developed in observance of mandatory UE Regulations:

EU Reg. 2016/919, EU Reg. 1315/201,1316/2013, EU Reg. 06/2017 containing the European Deployment Plan (EDP)














The Plan include also Economical Sustainability and ERTMS Safety Improvement criteria

## According the UE requirements, ERTMS must be installed:

- On **all new high speed lines**
- On the TEN-T according a stepwise criterion:
  - Within the dates indicated in the «Core Network Corridors» EDP (Reg.UE 06/2017)
  - Within **2030** on the «**TEN-T Core Network**»
  - Within **2050** on the whole «**TEN-T**»

## Business Opportunity

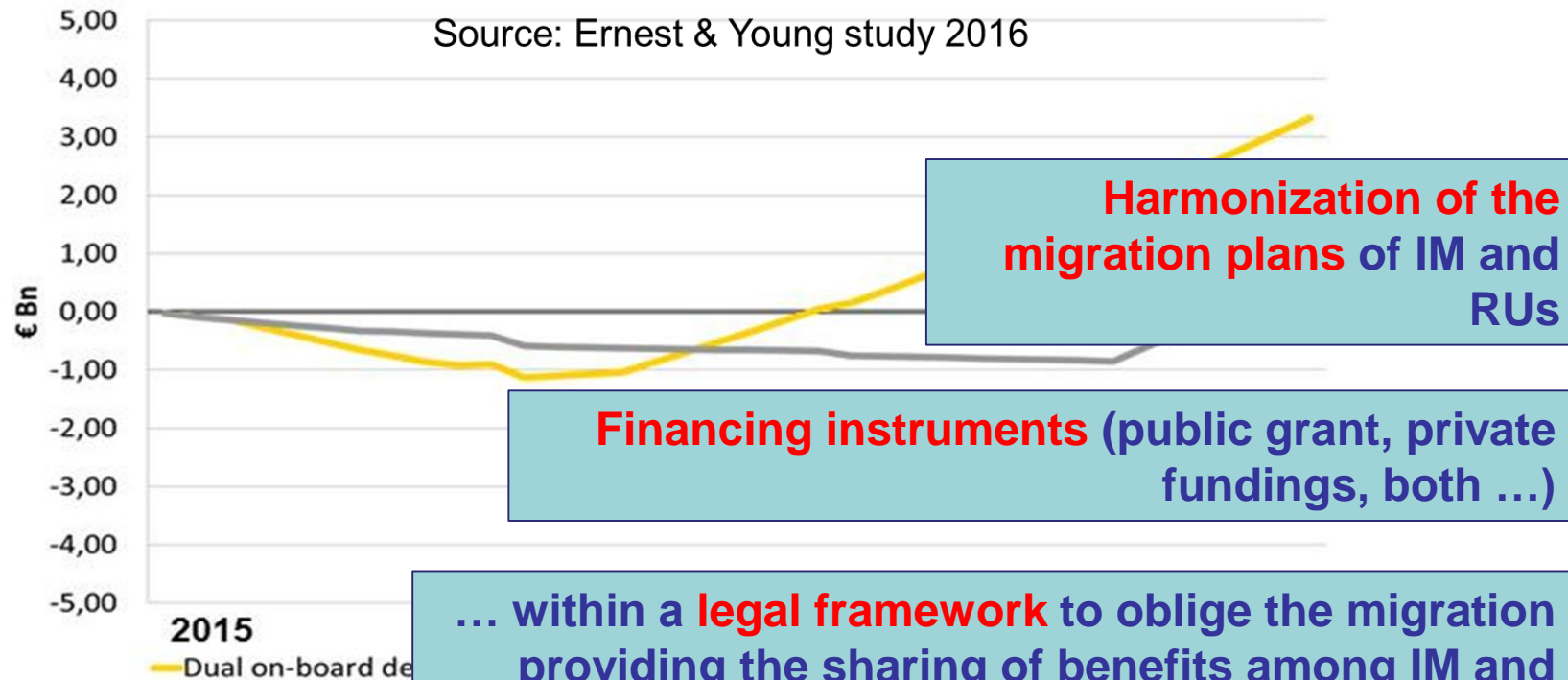
- In metropolitan nodes (**HD ERTMS**) in order to maximize high-density functionality
- On low-traffic lines (**ERTMS Regional**) where it is a great opportunity in terms of reducing commercial and maintenance costs

 RFI RETE FERROVIARIA ITALIANA GRUPPO FERROVIE DELLO STATO ITALIANO		Codice RFI TC3CC SR RR AP H 105 F		FOGLIO 14 of	
PIANO DI SVILUPPO ERTMS/ETCS e GSM-R					
<b>PIANO DI SVILUPPO DI ERTMS (ETCS E GSM-R) SULLA RETE RFI</b>					
Rev.	Data	Descrizione	Redazione	Verifica Tecnica	Autorevolezza
F	15/06/2017	Integrazione di informazioni utili richieste dal MIT per la definizione del Piano di Implementazione Nazionale ERTMS, come previsto dalla STI CCS-Reg. UE 919/2016	   	   	   

# Some consideration ...

- How to achieve a positive Business case as soon as possible after such a big investment ?

The migration to ERTMS must be followed by **CCS National systems decommission**



**Harmonization of the migration plans of IM and RUs**

**Financing instruments** (public grant, private fundings, both ...)

... within a **legal framework** to oblige the migration providing the sharing of benefits among IM and RUs

# Ministry Level - ERTMS National Deployment Plan NDP

## Description

Through an articulated process of sharing and involving involved parties, the Ministry of Infrastructure and Transport, starting from the RFI Deployment Plan, in compliance with the point 7.4.4 "National Implementation Plans" of the Annex to the EU Regulation 919/2016 (STI CCS), defined a National ERTMS Plan for the Italian rail system as a whole (Infrastructure Managers and Railway Undertakings) with the aim of providing all operators with useful elements to determine their choices both on trackside and on-board.

With regard to ERTMS applications on the RFI network, the Plan is perfectly aligned with the RFI ERTMS Plan.

For ERTMS on-board applications, based on the infrastructure ERTMS investments, the National Plan provides coherent considerations for the on board equipment.

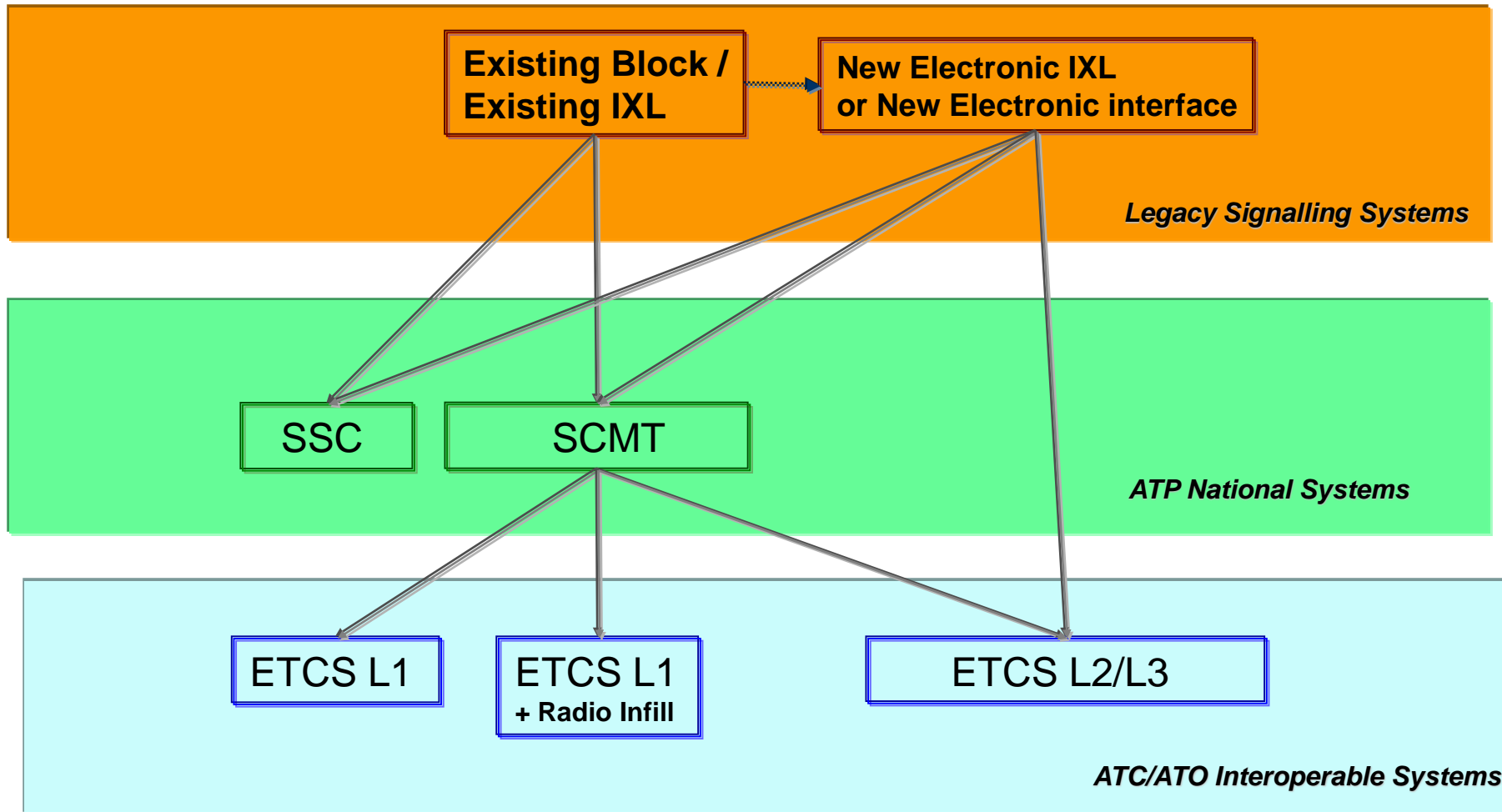
## From 2026

**IM Could start the official decommissioning of Class B in a  
Line equipped also with ERTMS  
(2024 Advisory Program for Rus)**

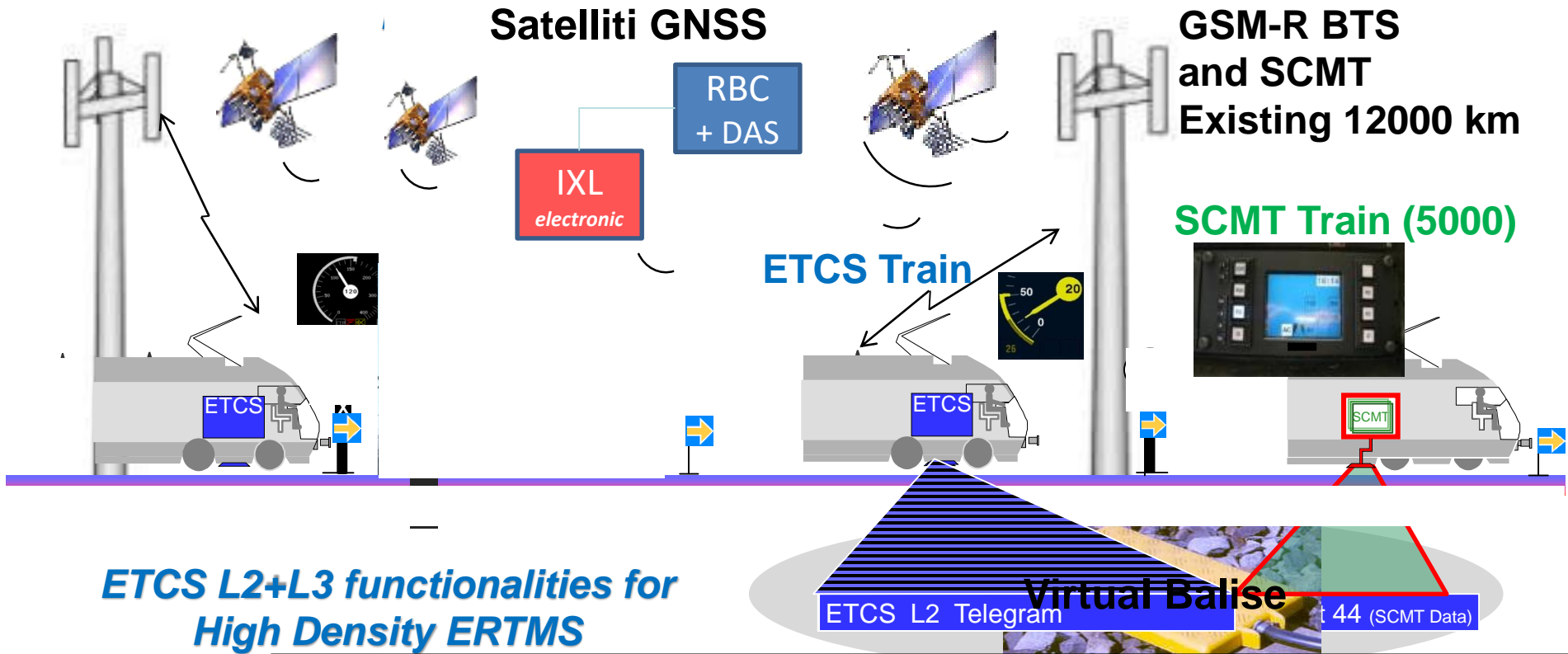




# ATP/ATC Overlapping Strategy

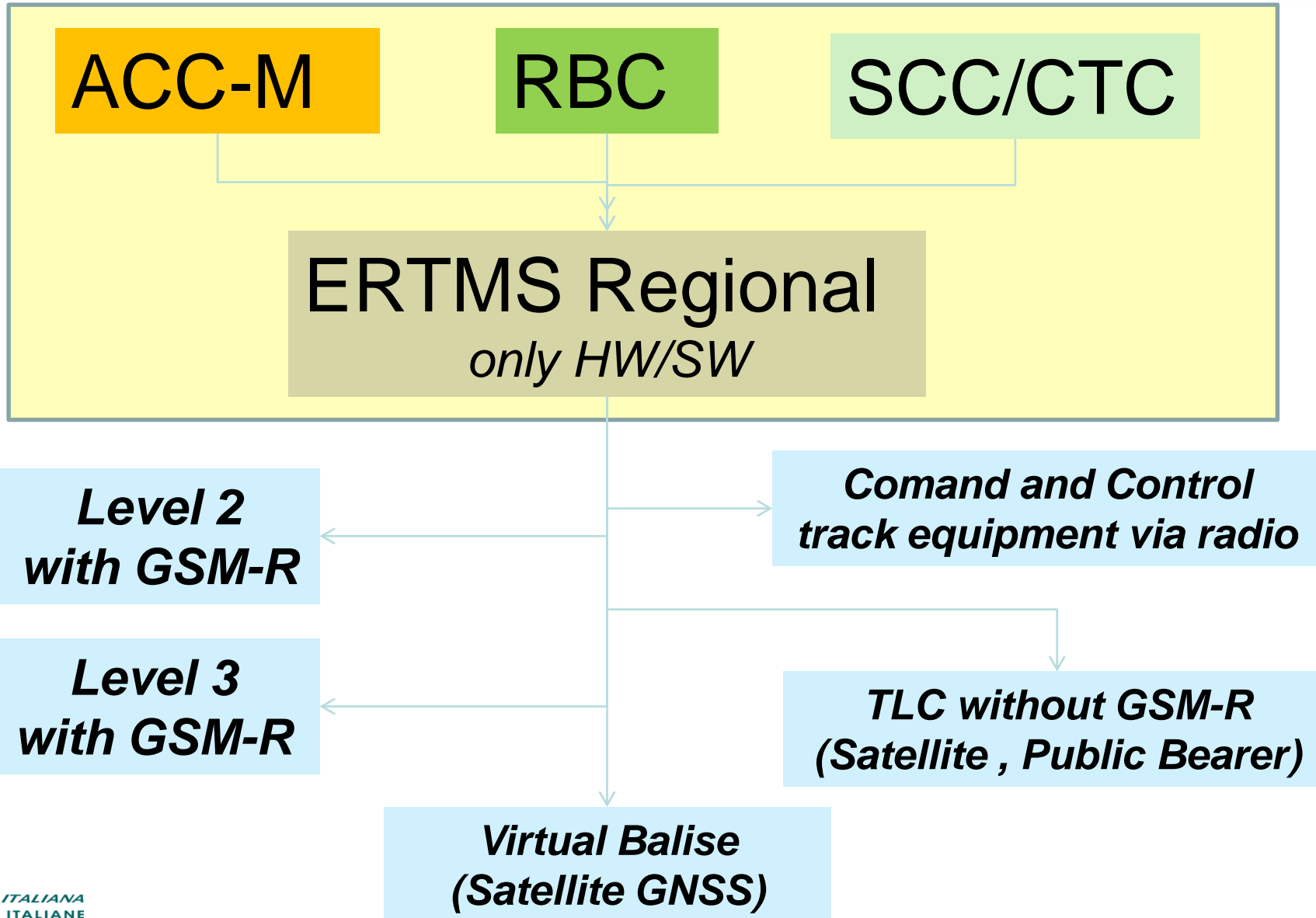


# ERTMS Migration with an initial overlapping of SCMT: TEN-T Corridors, HD Urban Nodes and Regional Lines



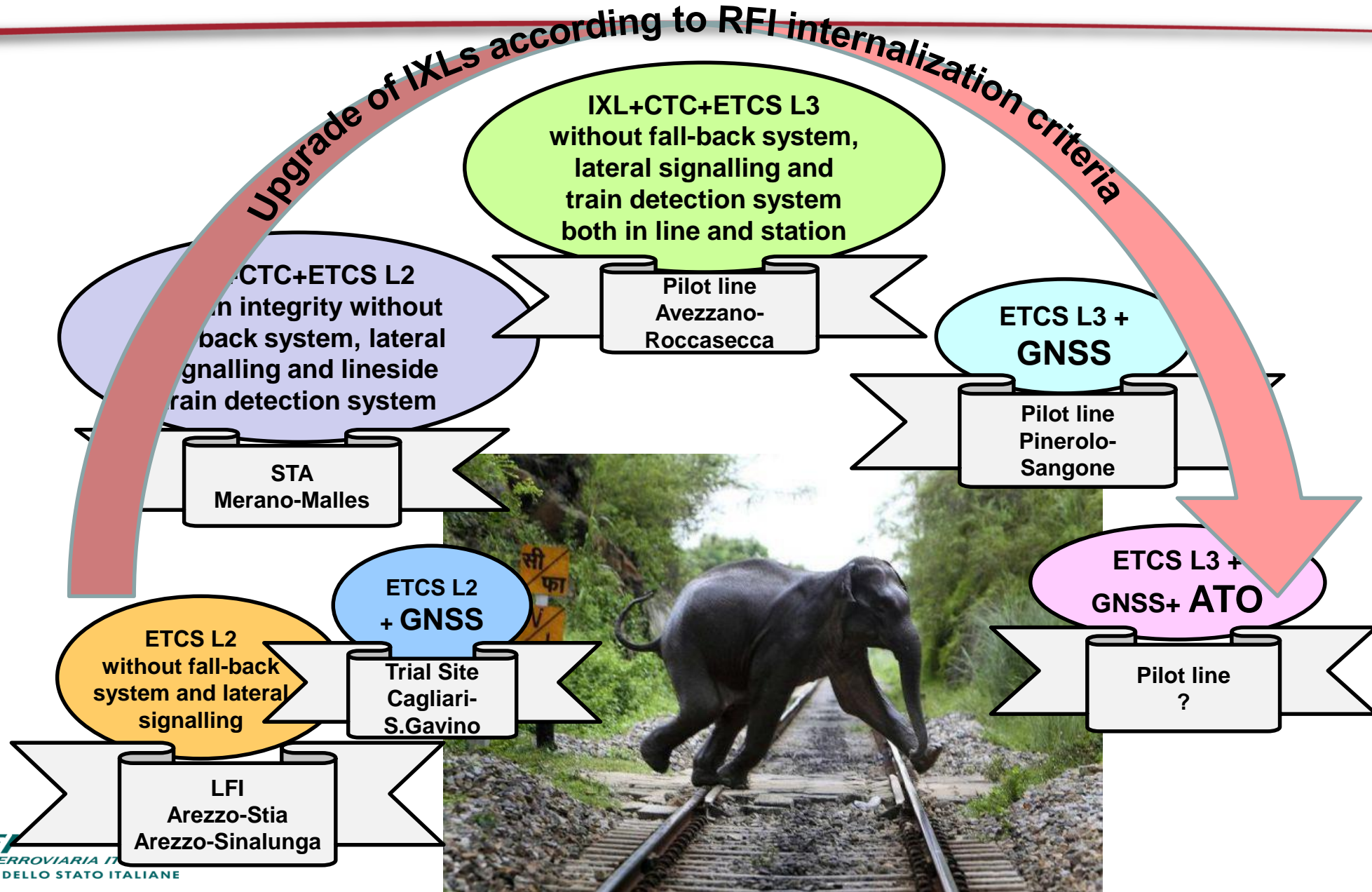
**Possible dismissal light signal and SCMT only when all RUs train will be equipped by ERTMS**

# ERTMS Regional: different scalable options





# ERTMS on Regional Lines: Occasion for a new CCS Strategy



# National Implementation Plan highlights

- TRK deployment criteria

Type of service	Baseline	Level
HS	2 (at least up to 2020)	2
Conventional main lines	3	2 (preferably) or 1+radio infil or 1 (last mile or according to IXL upgrade strategy)
Urban	3 R2	2 with L3 functionalities (train integrity)
Regional	3	2 or 3 with possible introduction of Satellite technology and ATO
Border Crossing	3	According to bilateral agreement

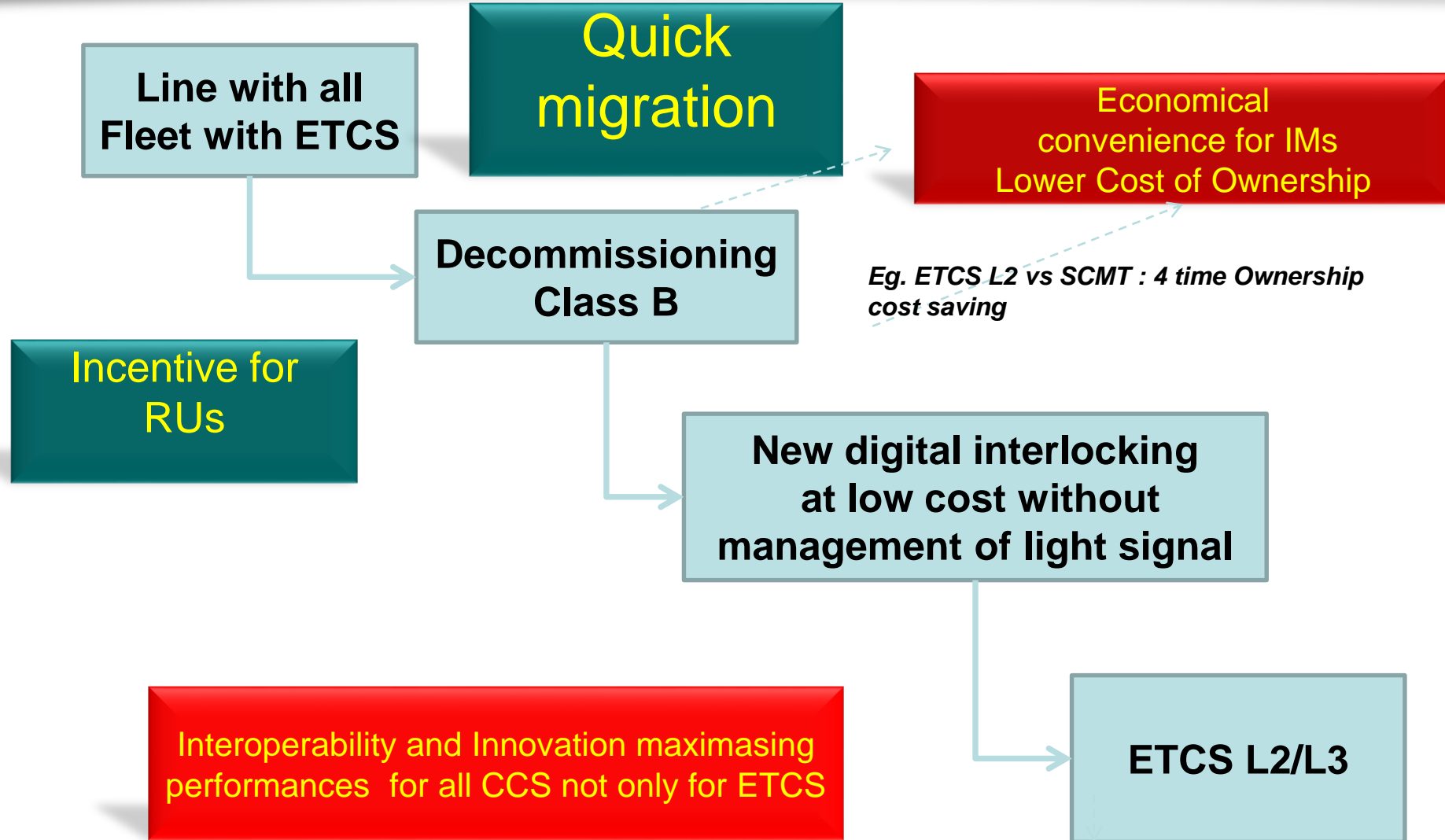
# NIP Class B dismissal principles

Type of service	Class B dismissal criteria
New HS lines	ERTMS <u>without</u> Class B fallback
Existing HS lines not already equipped with ERTMS (Roma-Firenze)	Upgrade to ERTMS and <u>contextual</u> Class B decommissioning
Conventional main/urban/border crossing line	ERTMS <u>overlayed</u> to existing Class B; Class B decommissioning starting from 2026
	On specific case (e.g. regional applications) Class B decommissioning can be anticipated upon IM and the relevant RUs specific agreement



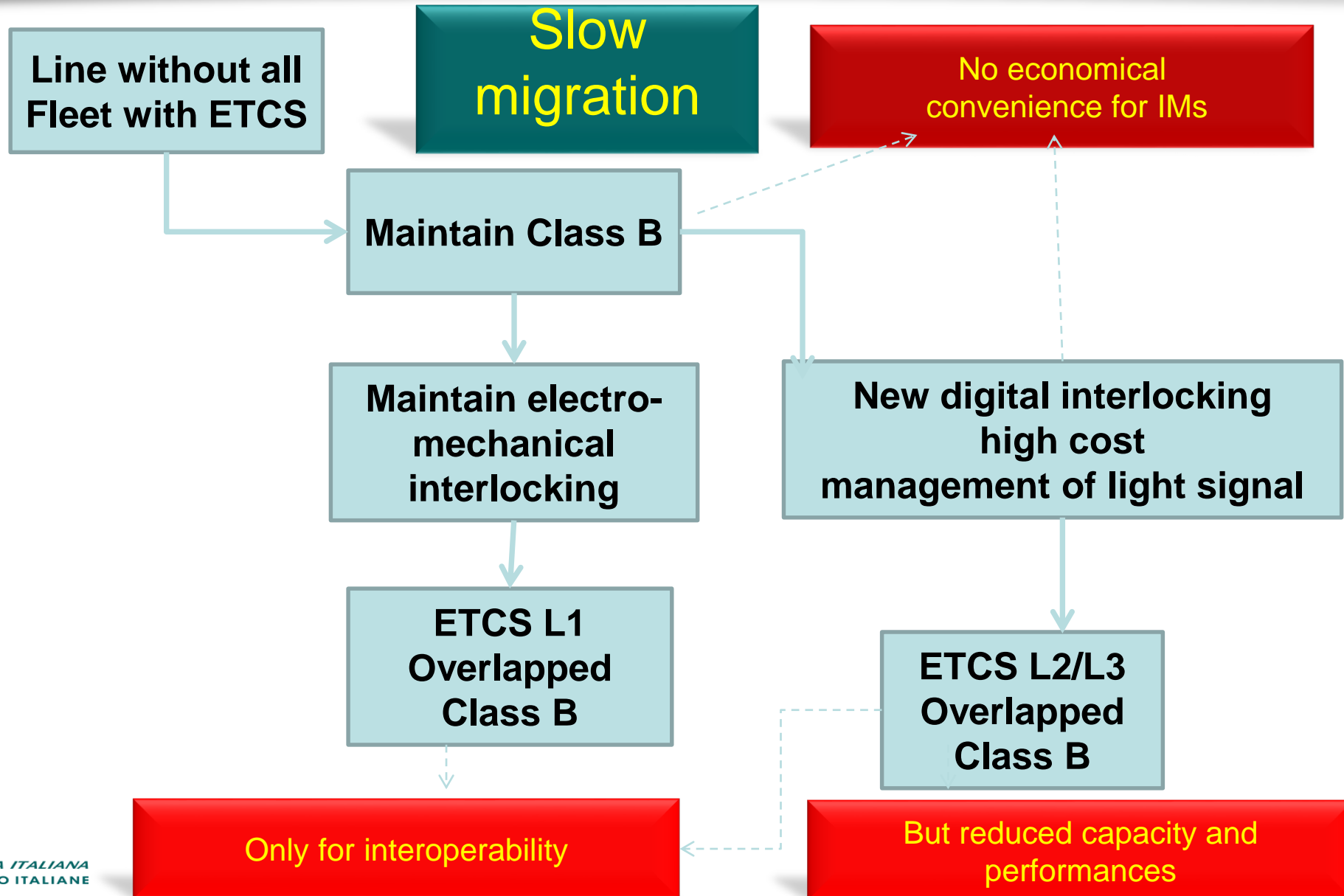
# Key role : Decommissioning Class B

*1<sup>st</sup> Scenario*



# Key Role: Decommissioning Class B

*2<sup>nd</sup> Scenario*



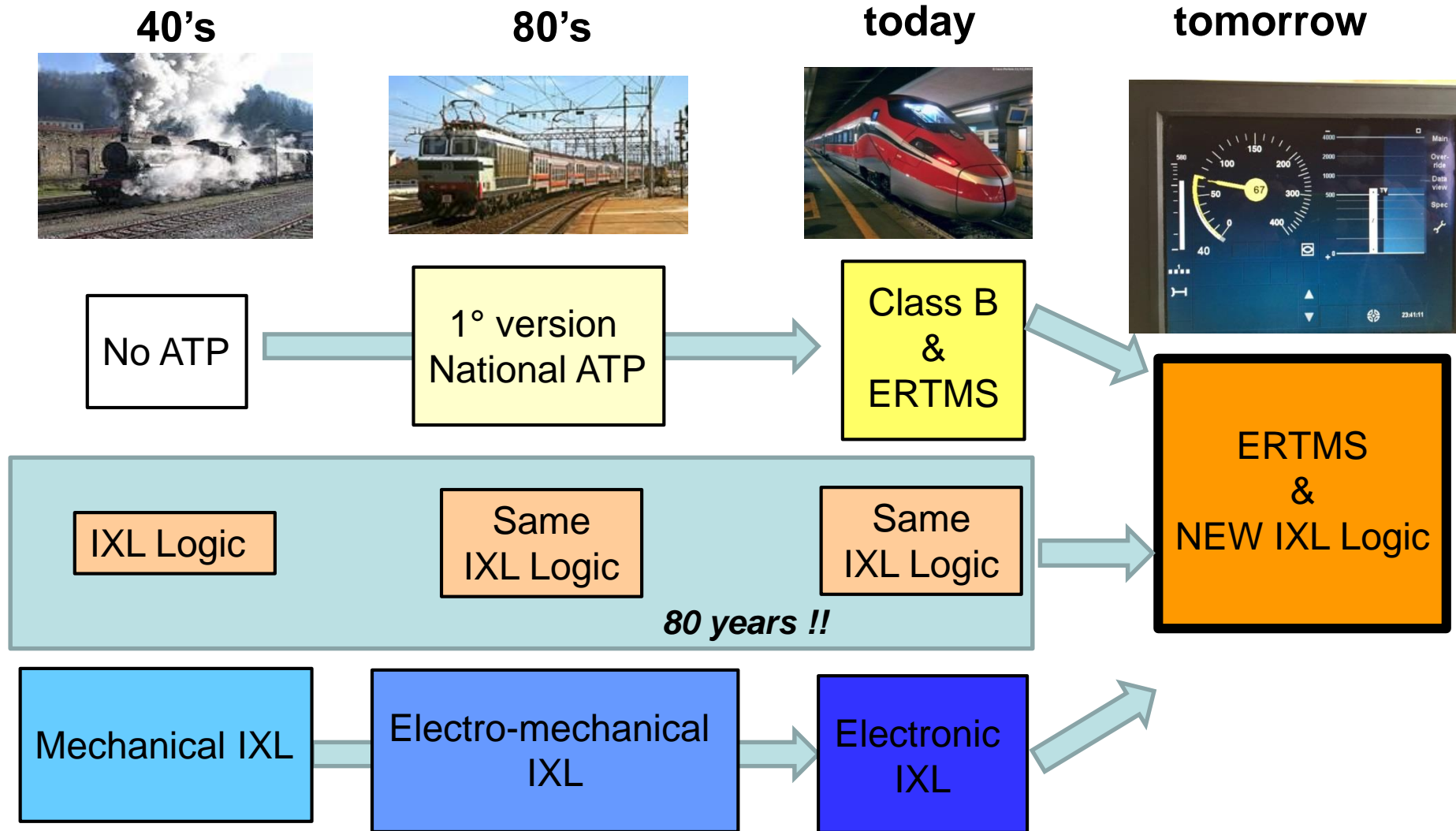
# How to make ERTMS more attractive ?

- Financing tool
- Reducing CCS cost: ERTMS without national legacy system can help to reduce the cost of the IXL !

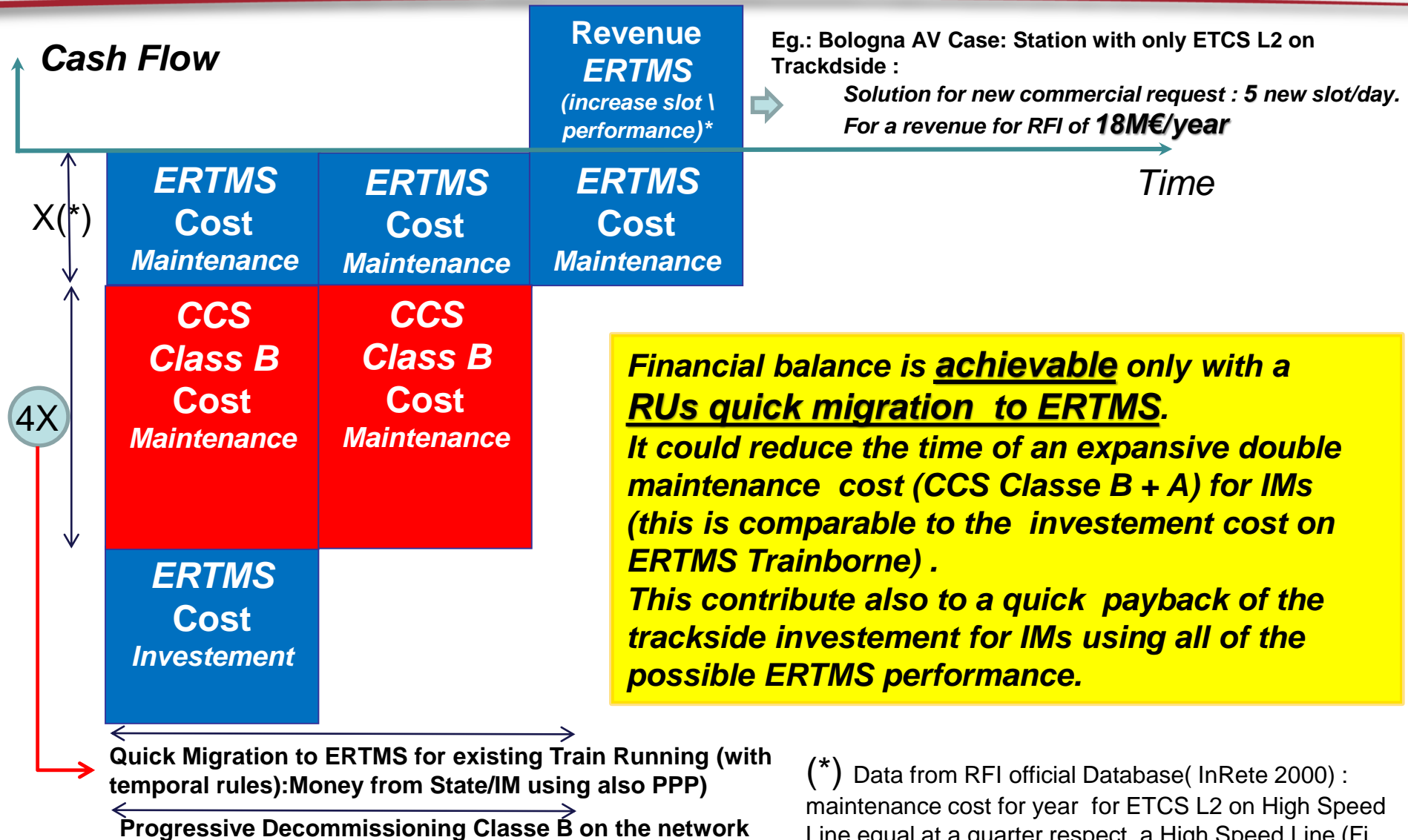




# Class B Decommissioning & New Logic for of IXL



# Sustainable Trackside- Trainborne for ERTMS migration



(\*) Data from RFI official Database( InRete 2000) : maintenance cost for year for ETCS L2 on High Speed Line equal at a quarter respect a High Speed Line (Fi Roma) with ClassB (SCMT and Bacc)