European Global Navigation Satellite Systems Agency

ERSAT GGC

ERTMS implementation plan in Italy

Fabio Senesi– RFI

ERSAT GGC Final Event

Praga, 26th November 2019

From different CCS to a fully ERTMS newtwork

ERTMS acceleration plan

Total network: 16.742 km

~ 1.000 km	City network
~ 950 km	High Speed
~ 2.900 km	Basic performance
~ 3.900 km	Medium performance
~ 7.950 km	**Regional, Local**

Deploy ERTMS on the <u>entire Italian railway</u> infrastructure and trains

first ERTMS deployment on Regional lines

Decommisioning of legacy systems as requested by EC

Leverage on ERTMS performance

- + 19 years of commercial service
- + 738 km high speed lines operating without fall back
- + 300 km/h train speed
- Baseline 3 trackside system compatibility
- + 300 trains per day
- 2 competing train operators
- 5’ real headway (3’ potential headway)

European bench mark

…….and new applications under development

ATO	ETCS Level 3	Satellite positioning	Next Gen. Communications

ERTMS implementation milestones

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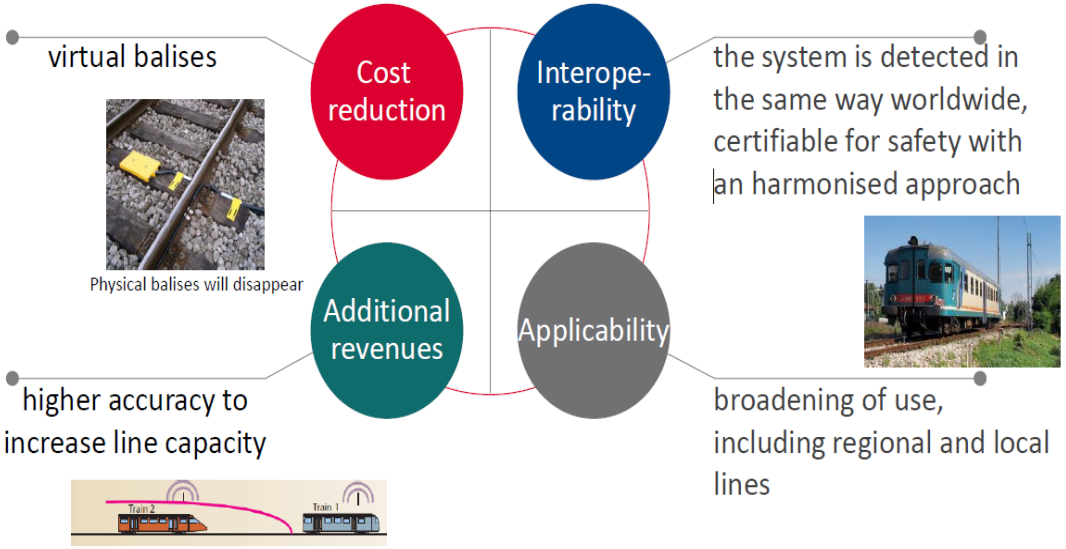
ERTMS & GNSS

ERTMS is the system chosen by EC to realise interoperability in the railway network, but it is also the best system in order to:

Improve safety for railway transport	GNSS positioning can further enhance ERTMS performance
Increase capacity at nodes	
Increase reliability, punctuality and speed	
Reduced maintenance costs	
Reduced costs for the implementation of digital Interlockings (IXLs) and increased efficiency in implementing changes to the station layout	



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Focusing financial contributions towards an EU priority

PROSPECTIVE ON TRACK INSTALLATION FINANCIAL SOURCES FOR THE IM	
STATE FUNDING 95%	STATE FUNDING
	SPECIFIC LAW
UE FUNDING 5%	ERDF
	CEF ORDINARY & CEF BLENDING

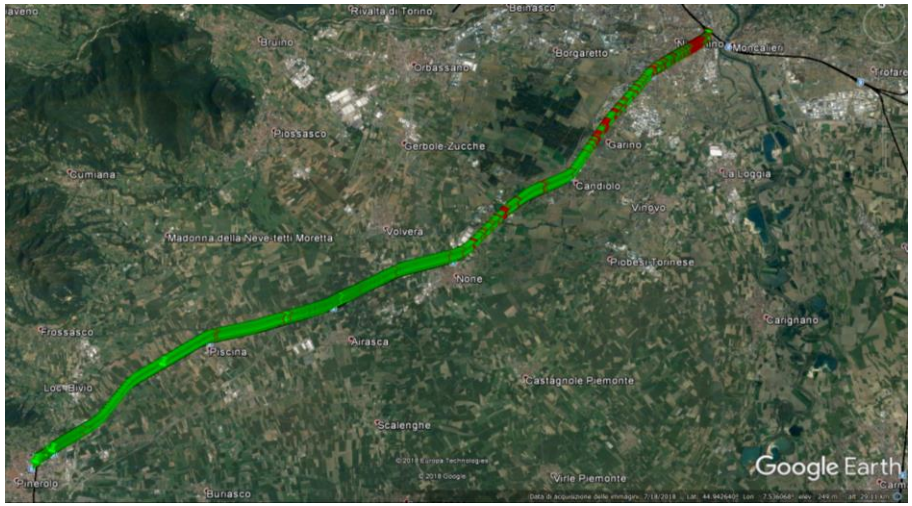
PROSPECTIVE ON BOARD EQUIPMENT FINANCIAL SOURCES FOR RUS	
UE/STATE FUNDING RANGE 50% - 80%	STATE FUNDING
	ERDF
OTHER UE CEF 3%	CEF ORDINARY & CEF BLENDING
OTHER: -INCENTIVES - SELF-FINANCING RANGE 17% - 47%	INCENTIVES FOR INVESTMENTS AND ORDINARY MAINTANANCE DUE TO IM SAVINGS
	MARKET

An ERTMS ecosystem is ideal to allow full scale GNSS adoption

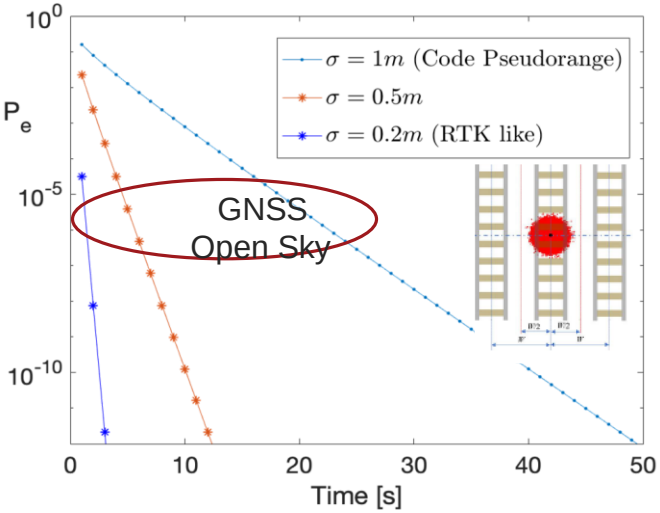
<u>Target: a first fleet of 20 – 30 trainset after the certification phase</u>

Challenges to boost ERTMS attractiveness

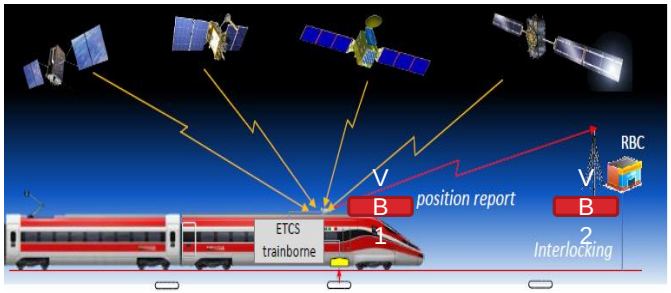
Ensuring train positioning in any environmental conditions



Track discrimination



Reduce SR travelled distance



SR travelled distance

Leverage on multi-sensor, DFMC, data fusion technologies - key enablers for connected and autonomous cars

New Pilot Line: Novara - Rho

This line being already equipped with ACCM and ERTMS - is an ideal backbone for the certification of the satellite assets

Existing infrastructure

- ACCM (IXL multistation) + RBC provided by Hitachi Rail STS
- GSM-R in operation

Passanger Railway Companies

- Trenitalia Long distance and Regional
- TRENORD Regional trains
- SNCF TGV trains

Freight Railway Companies

- Captrains
- Mercitaliarails
- SBB Cargo
- DB Cargo
- Inrail

Conclusion & Recommendations

- RFI is implementing a plan **based on the ERTMS standard**
  - ERTMS acceleration plan ready to start
  - pioneering satellite technology to **enhance ERTMS performance**
- Certification process of EGNSS asset agreed with ERA **to comply with ERTMS** (no derogations needed) - **Novara-Rho 2021**
- Priority to first **validate & certify** a satellite-based ERTMS for regional lines
- Roadmap open to validate **new technologies**
- Co-operation with ESA, GSA for **exploiting EGNOS**
- Active contribution towards a standard (**STI – 2022**) within the mandate of GNSS Game Changer
- Urgent actions to establish a **service provider** for the augmentation network

Thank you!