

Taking benefit of Game Changers to get the best performance with ETCS

Nicola Furness, Network Rail, EIM

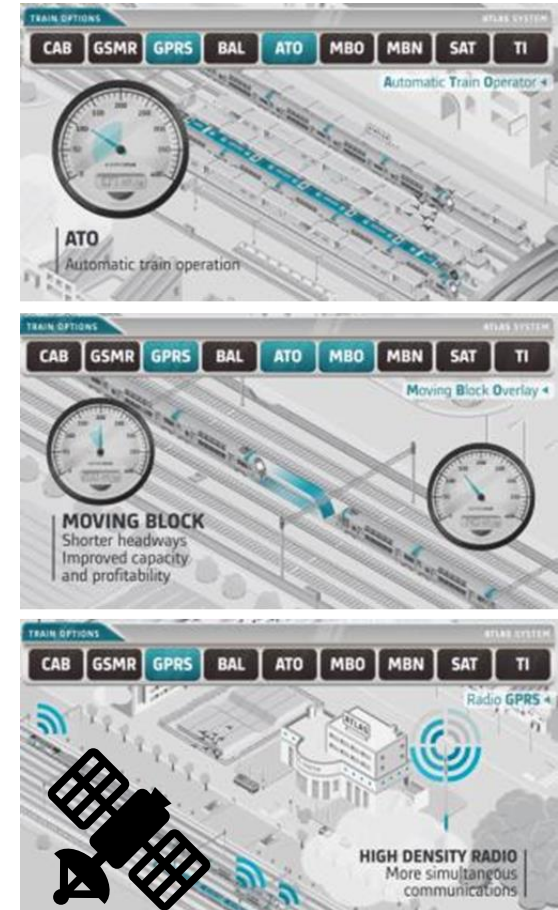
Vincent Passau, Alstom, UNIFE

ERTMS2024 Conference
23-25 April 2024
Valenciennes, France

ERTMS Successes

Launched by Europe, and a worldwide success

- A set of **specifications in the public domain**;
- A **competitive landscape** with a large suppliers base for ETCS constituents;
- A **governance** to support changes and evolutions;
- A commitment of the sector to include new features (named « **Game Changers** ») to increase the attractiveness of ETCS.
 - ▶ Automatic Train Operation (ATO GoA2)
 - ▶ Train Integrity and Level 3 / Hybrid Level 3
 - ▶ New radio system (FRMCS)
 - ▶ Satellite positioning

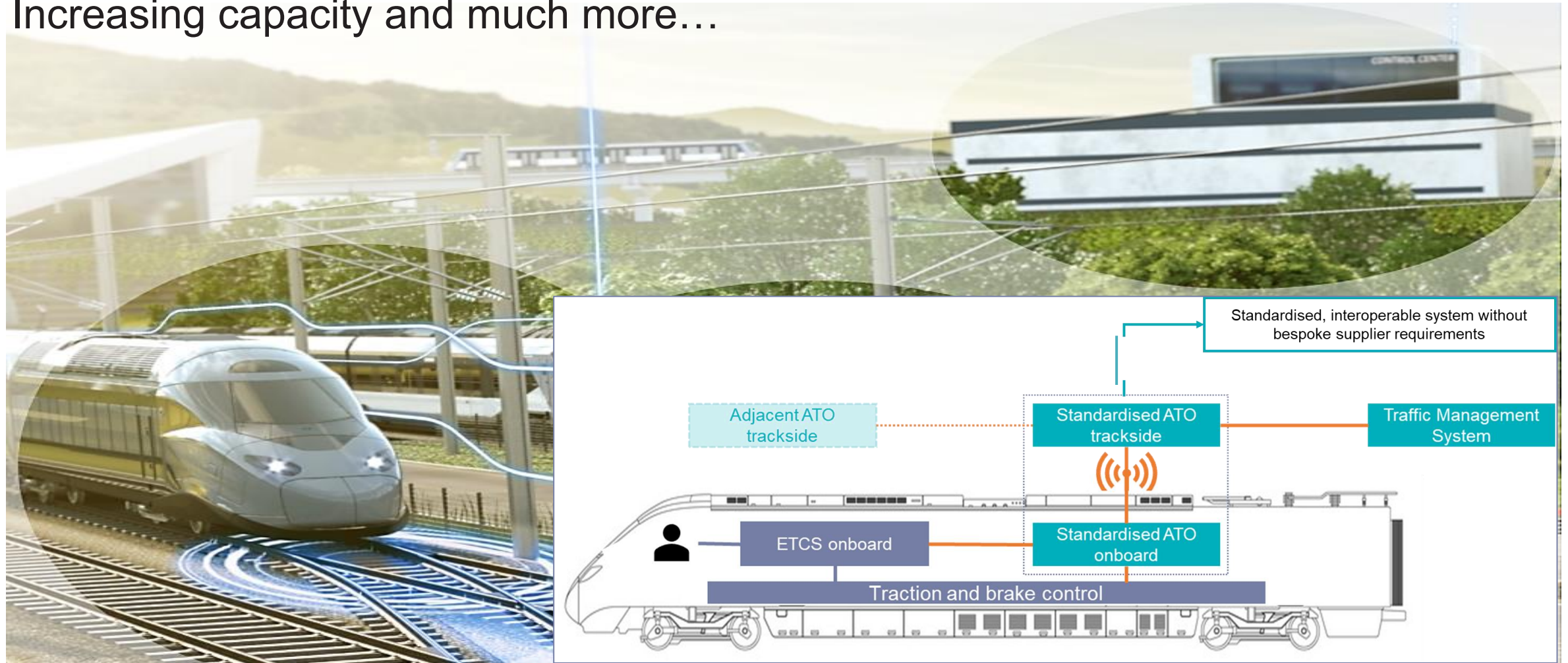


www.chutterstock.com - 36561765

ERTMS2024 Conference
23-25 April 2024
Valenciennes, France

Automatic Train Operation

Increasing capacity and much more...



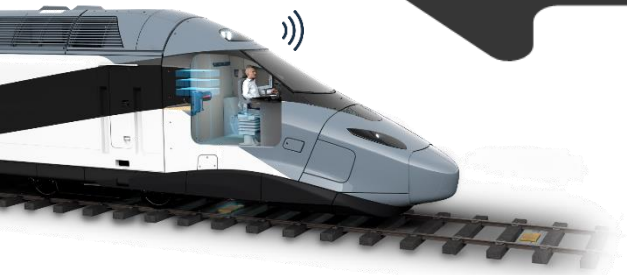
ERTMS2024 Conference
23-25 April 2024
Valenciennes, France

Operational Improvements | Automatic Train Operation



- Improved Performance allowing better driving patterns & quicker recovery from disturbances
- Improved Customer Experience with smoother more predictable journeys

- Increased Capacity with more predictable & accurate driving patterns
- Environmental Sustainability providing energy optimised driving patterns & operation



 **Automatic Train Operation over ETCS**

CCS TSI 2023
All specifications to support implementation now available

Next Steps
Feedback from ATO GoA2
Deployments

- Improved Safety
- Improved Customer Experience
- Improved Performance
- Decreased Whole Life Cycle Cost
- Increased Capacity
- Better Environmental Sustainability

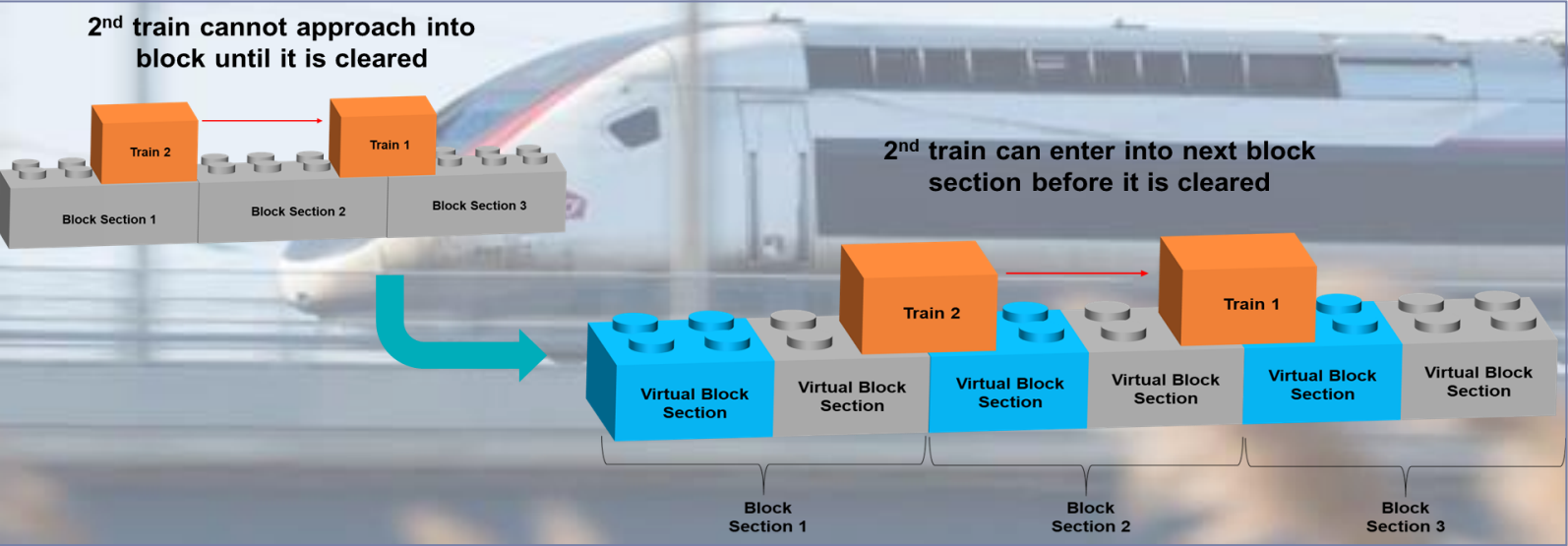


ERTMS2024 Conference
23-25 April 2024
Valenciennes, France



Hybrid Train Detection - *formerly Hybrid Level 3*

Increasing capacity and optimising life cycle cost while mitigating the challenges of a ETCS deployment without any trackside train detection...



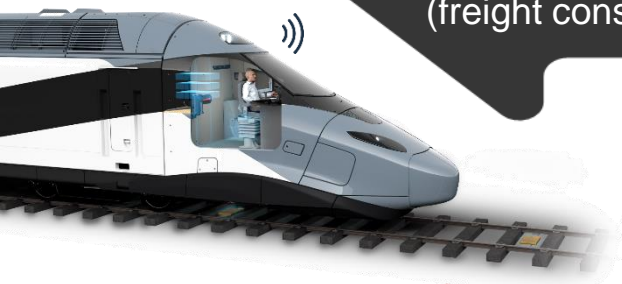
Operational Improvements | ETCS Hybrid Train Detection



Less trackside train detection

- to be commissioned and maintained
- Improved trackside worker safety
- Higher level of robustness against train detection disturbances

No need to have train integrity on all vehicles (freight consists)



Radio Based ETCS
Hybrid Train Detection

- Improved performance based on actual train capability & block section splitting
- Increased Capacity available without needing to increase amount of track side train detection by using virtual blocks

CCS TSI 2023
All specifications to support implementation now available

Next Steps
Feedback from Hybrid Train Detection Deployments

Improved Safety

Improved Customer Experience

Improved Performance

Decreased Whole Life Cycle Cost

Increased Capacity

Better Environmental Sustainability

Hybrid Train Detection: some reference projects

NCRTC, India – in commercial service

- **ERTMS Hybrid Train Detection** on 82 km of Delhi – Ghaziabad – Meerut Regional Rapid Transit System Corridor and 40 new built trains
- Reduced journey time < 60min (versus 100)
- **LTE communication** towards FRMCS
- **ATO GoA2**
- Platform Screen Doors using Packet 44



ERTMS2024 Conference
23-25 April 2024
Valenciennes, France



Paris-Lyon, France – in execution

- **ERTMS Hybrid Train Detection** on 480 km of high-speed lines.
- Capacity up to 18 tr/h at 300 km/h
- Overlaid with national system (TVM) to assure continuity during migration.
- Revenue service in 2025-26



Rome HD, Italy – in execution

- Update of existing national signalling system to **ETCS Hybrid Train Detection** on 56km of line of Rome Node. Overlaid to the existing legacy (SCMT) for interoperability with the old fleet.
- Revenue service in stages between 2024 and 2027

ATO GoA2: some reference projects



Stuttgart S-Bahn, Germany – in execution

- Implementing ETCS level 2 and **hybrid train detection** as well as **ATO GoA2** embedded in EVC
- Increase granularity of adhesion factor for best performance
- **Innovative train integrity** with handshaking between OBUs
- Provision for FRMCS upgrade
- Total 333 retrofit vehicles



- Implementing ETCS level 2 and ATO GoA2 embedded in EVC
- 54 VHS trainsets | 360 km/h to be operated on the 249 km new High Speed 2 Rail link.



CFL Double Decker, Luxembourg – in execution

- Implementing ETCS level 2 and **ATO GoA2**
- Operation in Belgium, France and Luxembourg
- Total 34 new built vehicles

Conclusion

- **Game changers** are a reality with several projects already in commercial service or contracted
- **Benefits** are multiple
 - ▶ For the operators
 - ▶ For the Infrastructure
 - ▶ For the end Users
- **Standardisation** is key to protect early investment in ETCS and maintain interoperability.
- Looking forward to the next ones...
 - ▶ Taking the best of Radio with FRMCS
 - ▶ Taking the best of Satellite Positioning
 - ▶ ...



See you soon
THANK YOU

European Rail
Infrastructure
Managers **EIM** 

 @UNIFE

 UNIFE - The European Rail
Supply Industry Association

unife 
THE EUROPEAN RAIL INDUSTRY [®]