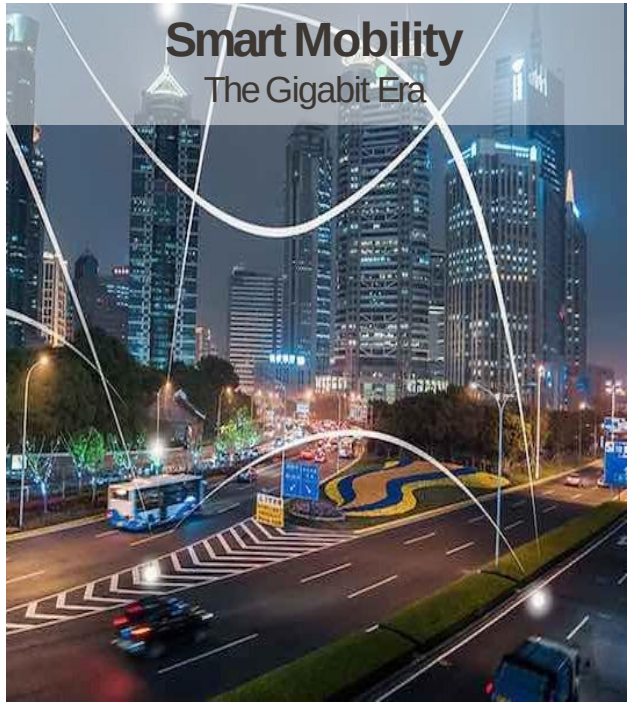
5G FOR RAILWAYS APPLICATIONS

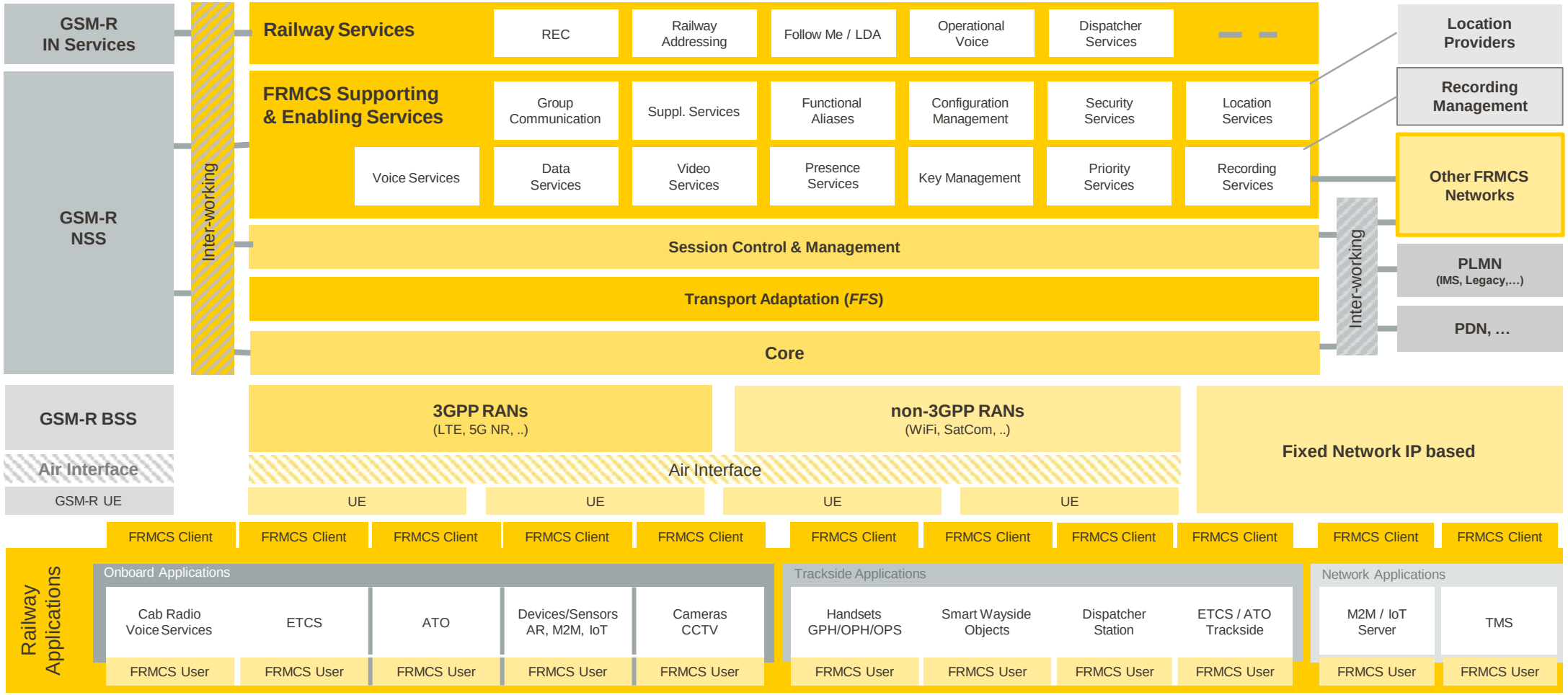
AMINE DIDIOUI

SNCF - INNOVATION & RESEARCH

CONNECTIVITY AS A KEY ENABLER FOR RAILWAYS



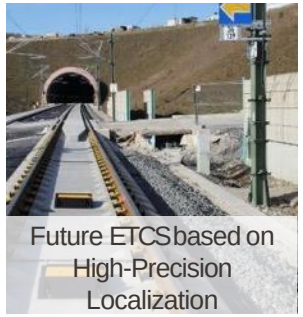
FROM GSM-R TO FUTURE RAILWAY MOBILE COMMUNICATION SYSTEM



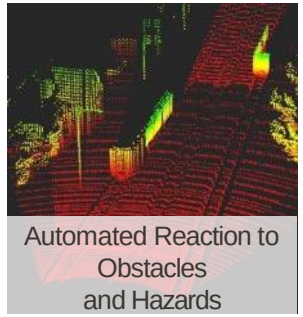
CRITICAL AND PERFORMANCE APPLICATIONS REQUIRE 5G WITH A DIFFERENT QUALITY SET

Critical Applications

- Core part of future rail operation
- In most countries today required to be based on railway-owned and -operated connectivity with dedicated spectrum


Future ETCS based on High-Precision Localization

Automated Train Operation

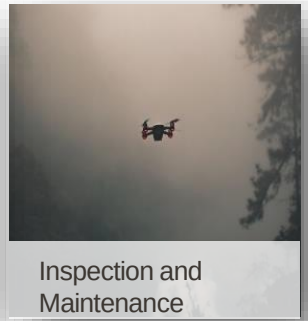

Automated Reaction to Obstacles and Hazards

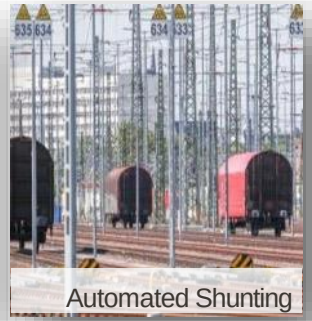
Automated Incidence Prevention and Management

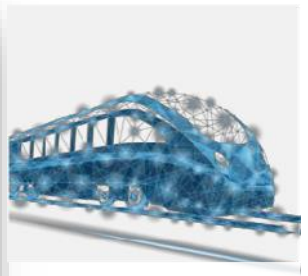
Performance Applications

- Supplementary applications for further increased performance and cost efficiency in rail operation
- Potentially using MNO spectrum & connectivity

Video Surveillance


Inspection and Maintenance

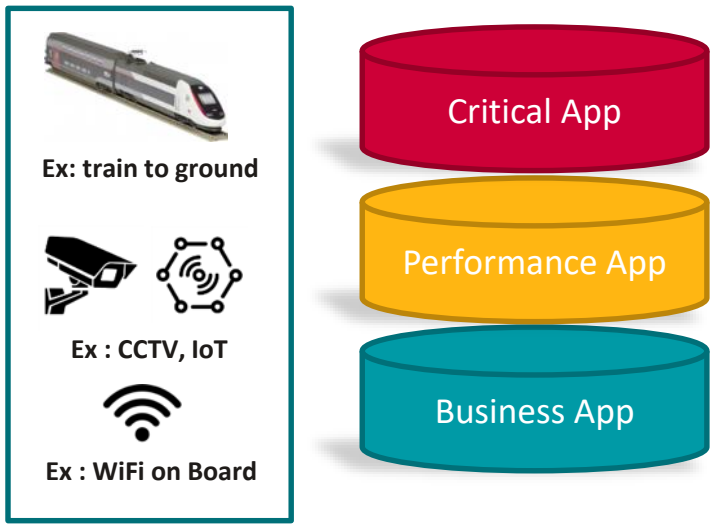

Automated Shunting


Digital Twin

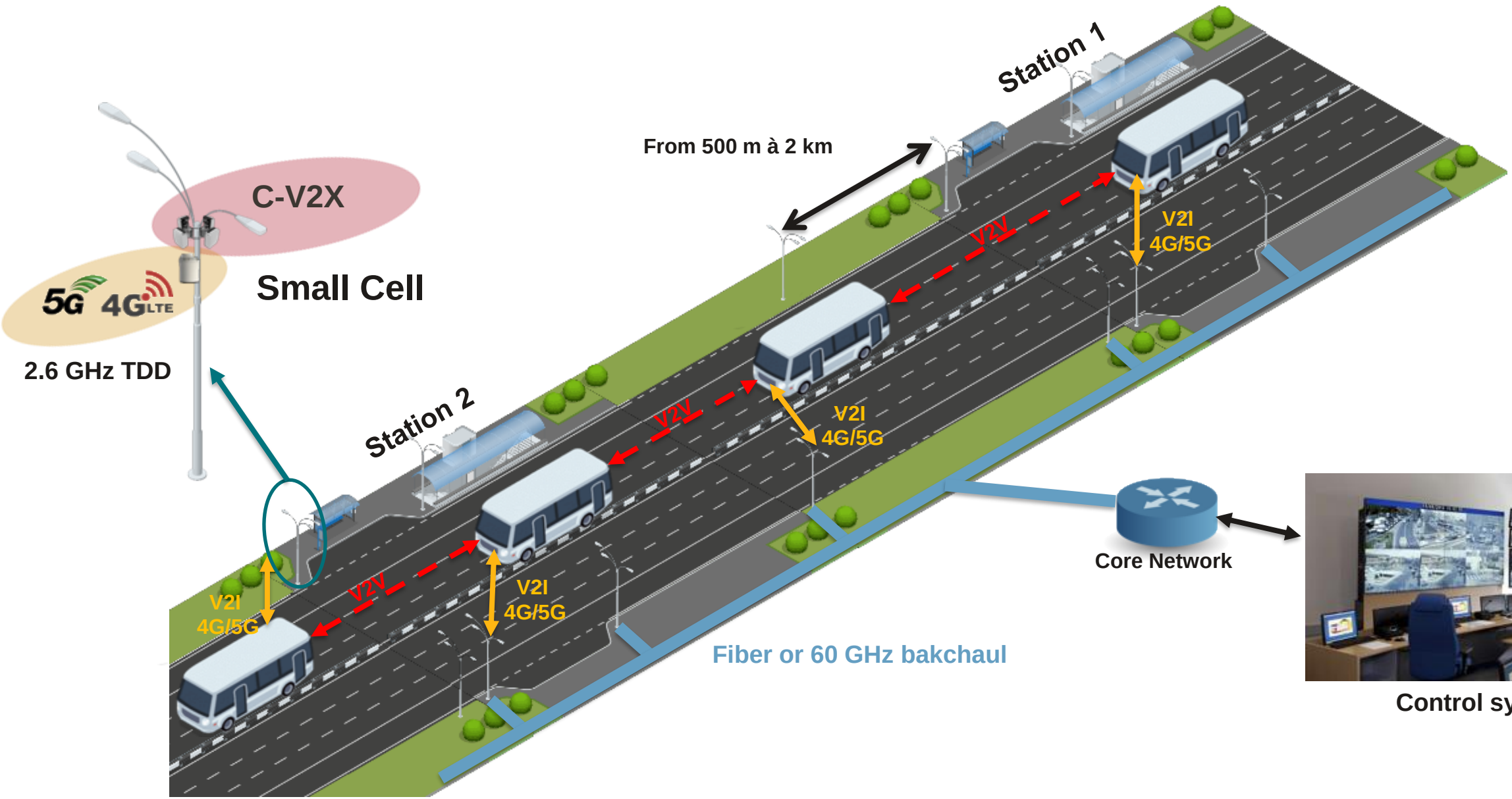
TOWARDS RAILWAYS 5G SLICES

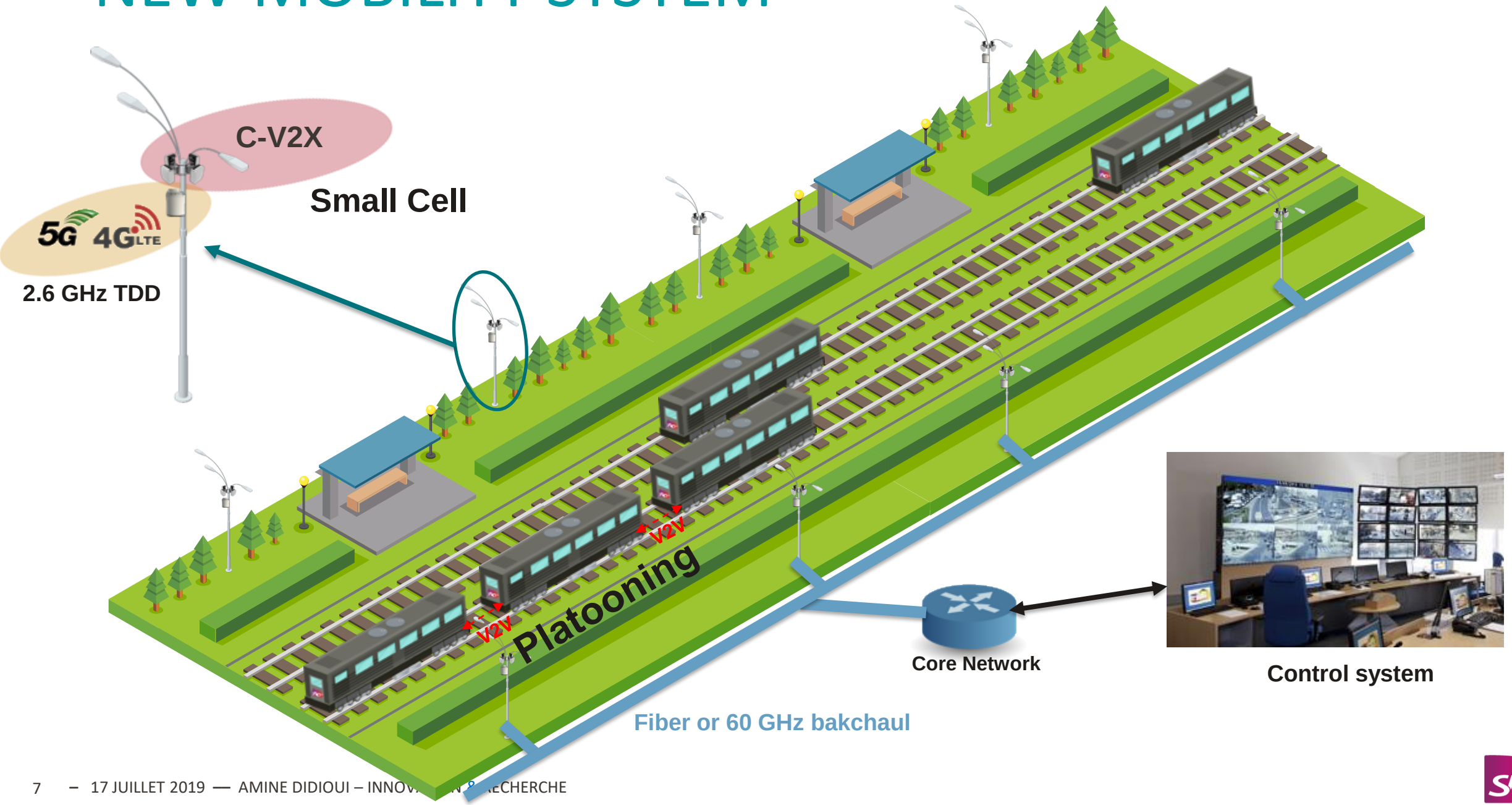
- **Aim:**
  - **FRMCS** (Future Railway Mobile Communication System) is a project driven by the International Railway Union (UIC), a worldwide railway association, dedicated to define the successor of GSM-R for a new railways digital radio system. FRMCS will mainly use 3GPP standards such as LTE and future 5G
  - **5G Slicing**: develop dedicated slice for each family of applications

- **Use cases:**
  - Critical App : Train to Ground and MCPTT
  - Performance App : CCTV, IoT on bord



NEW MOBILITY SYSTEM



Control system

NEW MOBILITY SYSTEM