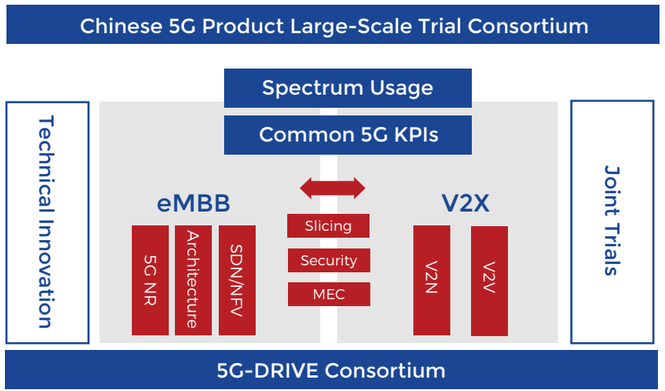
5G-DRIVE CONCEPT

The European Commission and China have agreed to fund joint projects on 5G trials to address two of the most promising 5G deployment scenarios: enhanced Mobile Broadband (eMBB) and Vehicle-to-Everything (V2X) communications.

5G-DRIVE, in collaboration with its Chinese twinning counterpart, will bridge current 5G developments in Europe and China through joint trials and research activities to facilitate technology convergence, spectrum harmonisation and business innovation before the large-scale commercial deployment of 5G networks occurs.

5G-DRIVE will develop key 5G technologies and pre-commercial testbeds for eMBB and V2X services in collaboration with the Chinese twinning project. Trials for testing and validating key 5G functionalities, services and network planning will be carried out in Europe and China.



5G-DRIVE CONSORTIUM

CHINESE TWINNING PROJECT: 5G PRODUCT R&D LARGE-SCALE TRIAL

Partner organisations: **China Mobile [Coordinator]**

Huawei, Datang, Ericsson China, Traffic Management Science Research Institute MoPS

Research Institute of Highway MoT, Shanghai International Automobile City

Beijing University of Posts and Telecommunications

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5G-DRIVE

5G HARMONISED RESEARCH AND TRIALS FOR SERVICE EVOLUTION BETWEEN EU AND CHINA

5G-DRIVE OBJECTIVES

5G-DRIVE aims to achieve technical, regulatory and business objectives:

TECHNICAL OBJECTIVES

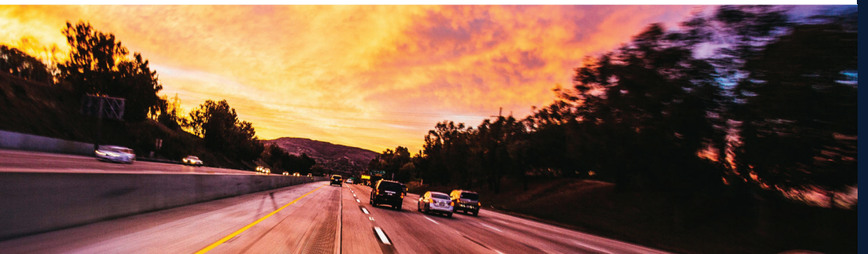
- Research and develop eMBB and V2X key technologies and services and trial them based on pre-commercial end-to-end testbeds in three EU locations: Surrey, JRC Ispra and Espoo.
- Analyse potential system interoperability issues in Europe and China and provide joint reports, white papers, and recommendations to address them accordingly.
- Submit joint contributions to 3GPP and other 5G standardisation bodies regarding the key 5G technologies developed and evaluated in the project.

REGULATORY OBJECTIVES

- Evaluate spectrum usage at 3.5GHz for indoor and outdoor environments in selected trial sites.
- Investigate regulatory issues regarding the deployment of V2X technologies.

BUSINESS OBJECTIVES

- Investigate and promote 5G business potential.
- Strengthen industrial 5G cooperation.
- Promote early 5G market adoption.



5G-DRIVE TRIAL SITES

5G-DRIVE will achieve its objectives by defining, organising and conducting a series of trials at three EU locations, with key characteristics:

SURREY (EMBB TRIALS)

- 4 km² for 5G testing (motorway, rural, urban, and dense areas).
- Supports interface to other testbeds, servers and databases.
- C-RAN architecture for coordinated joint processing.

JRC ISPRA (V2X TRIALS)

- 36 km of real-life driving conditions roads.
- V2X equipment, large-scale shielded anechoic chamber and 9 vehicle emission laboratories.
- PKI for security and trust in road transportation.

ESPOO (EMBB AND V2X TRIALS)

EMBB

- 2 km² test area.
- Outdoor and indoor deployment.
- Connection to MEC platform.

V2X

- 5G network infrastructure for V2X.
- MEC for vehicle data sensing.
- Road-side unit and infrastructure for V2I and V2N.
- Demo vehicle (Marilyn) for autonomous driving.

EXPECTED RESULTS AND IMPACT

TRIALS

- Implementation of eMBB and V2X trials.
- Validation of innovative applications, including efficiency of spectrum usage, energy consumption and costs.
- Validation of the geographic interoperability of the 3.5 and 5.9GHz bands.

SPECIFICATIONS

- Definition of common specifications of V2X and eMBB usage in the context of Internet of Vehicles with the China twinning project.
- Address field equipment, performance, interoperability and V2X specifications.

IPR AND STANDARD CONTRIBUTIONS

- IPR covering 5G key technologies, including massive MIMO, network slicing, V2X, and MEC.
- Contributions to 5G work items in 3GPP.

REPORTS

- More than 10 technical deliverables covering trial and research results.
- Joint reports with the China twinning project.
- Reports covering key technology evaluation, system interoperability, and a service platform.