**BACKGROUND**

- **20%** of CO₂ emissions from transport in Japan. From this, 90% are from automobiles. (FY 2005)
- ITS is expected to contribute to the reduction of CO₂ emissions from automobiles.
- However, there is no standard method for evaluating the CO₂ emissions.

**OBJECTIVE**

Development of an evaluation method of CO₂ reduction by ITS technology which is internationally approved.

**FRAMEWORK**

- Reference model
- Traffic simulation model
- Emission model
- Validation

**EXAMPLE APPLICATION**

- **Eco-driving**
  - By changing driving behavior
  - The description of the evaluation in both TS and EM modeling is to be provided for each factor in the reference model.

**METODOLOGY**

- Harmonization of Traffic Simulation (TS) Model and Emission Model (EM)
  - Several combinations of TS and EM can be used in practice (indicated by same-colored arrows): Microscopic scale, Mesoscopic scale, Macroscopic scale

**Validation using Benchmark Data**

- **Validation points**:
  - Microscopic approach: Acceleration of the TS model
  - Mesoscopic approach: Acceleration term of the EM

**Details of the method by meso TS + meso EM**

- **TS**
  - Vehicle behaviors
  - Vehicle speed trajectories
  - Stopping Speed Function (SSF)

- **EM**
  - CO₂ emission of each vehicle
    - Calculate fuel consumption
    - Statistical modeling
  - CO₂ Emission Volume

- **Probe Monitoring**
  - Estimated whole vehicle trajectories

**EXAMPLE APPLICATION**

- Eco-driving by changing driving behavior
  - Estimation for 22 hours on weekdays
  - Target Area: Tokyo Metropolitan 23 wards (40 km x 40 km)

**CONTACT**

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