

## [Technologies for Safe and Sustainable Road Traffic Society]

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**Traffic Management & Control**

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## Scientific Approach for Traffic Flow

The studies in the laboratory are related to traffic engineering from various aspects such as fundamental theoretical studies, analyses of data collected by different types of sensors, and the effect evaluation of traffic management methods/policies based on traffic simulation models. They are expected to resolve the traffic safety, congestion and environmental impact issues, and to lead to innovative road traffic.

The goals are to develop policy-assessment tools for safe, efficient and environmentally sustainable traffic society.

### Innovative policy

Studies on various traffic policies to safely and efficiently manage urban traffic flow:

- Advanced traffic signal phasing plan
- Optimization of coordinated traffic signal control
- Advanced dedicated lane usage for improving intersection safety and efficiency
- Street management for vehicles and pedestrians

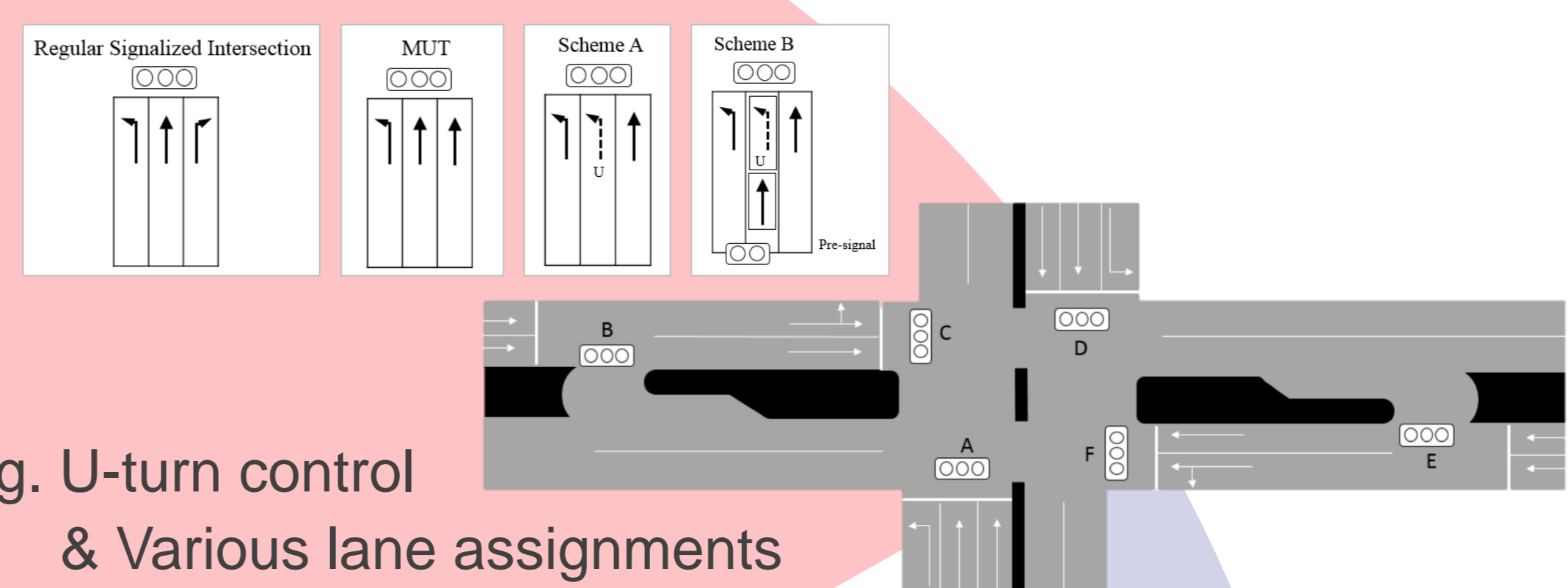
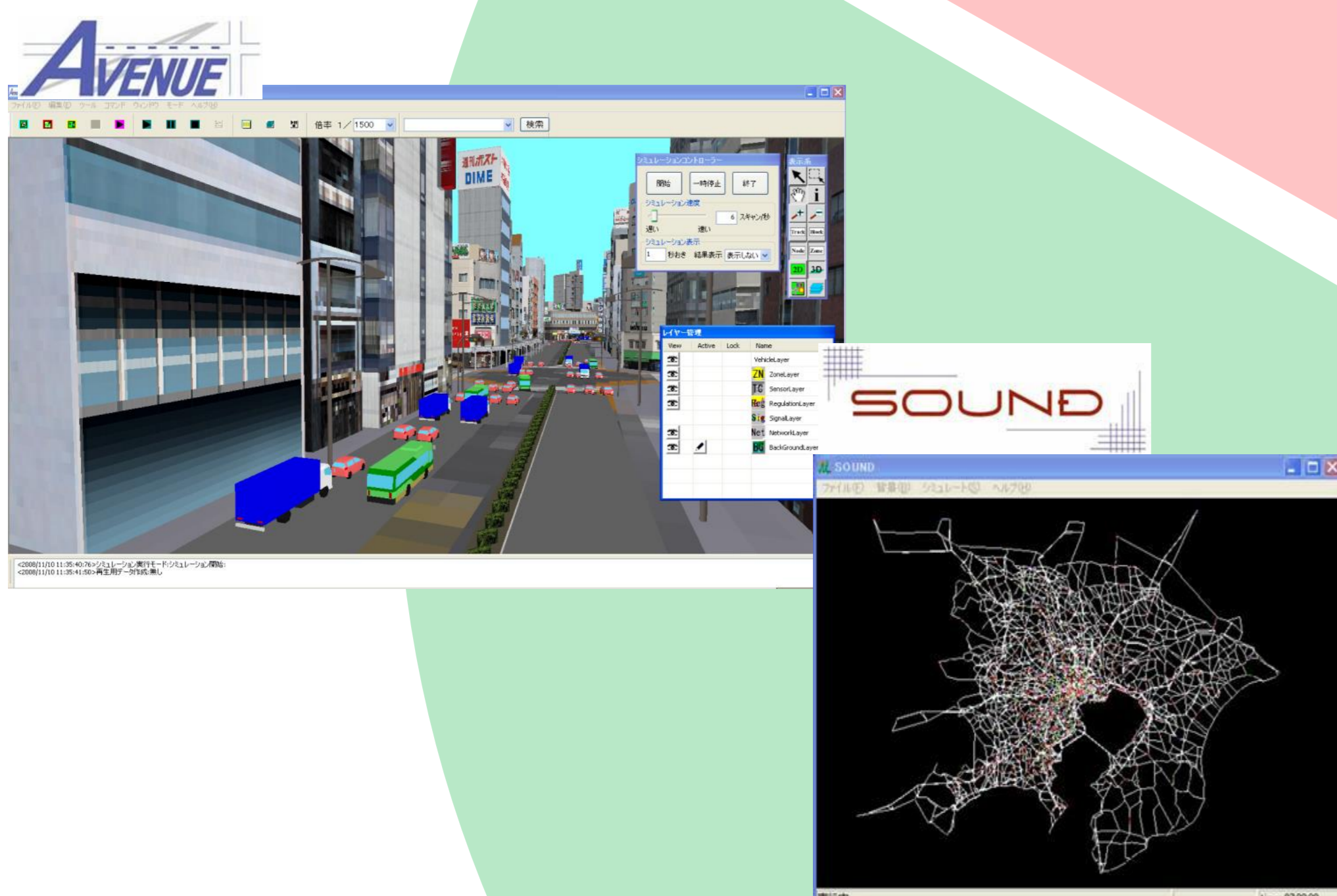


Fig. U-turn control & Various lane assignments



Development of traffic simulation models and its application to policy evaluations

- AVENUE (Street-level traffic simulator)
- SOUND (Regionwide-level traffic simulator)
- Operational evaluation system for 3 ring roads in Tokyo metro area
- Prediction model of turning trajectories at signalized intersection

Technology

**ITS**  
**INTELLIGENT**  
**TRANSPORT**  
**SYSTEMS**

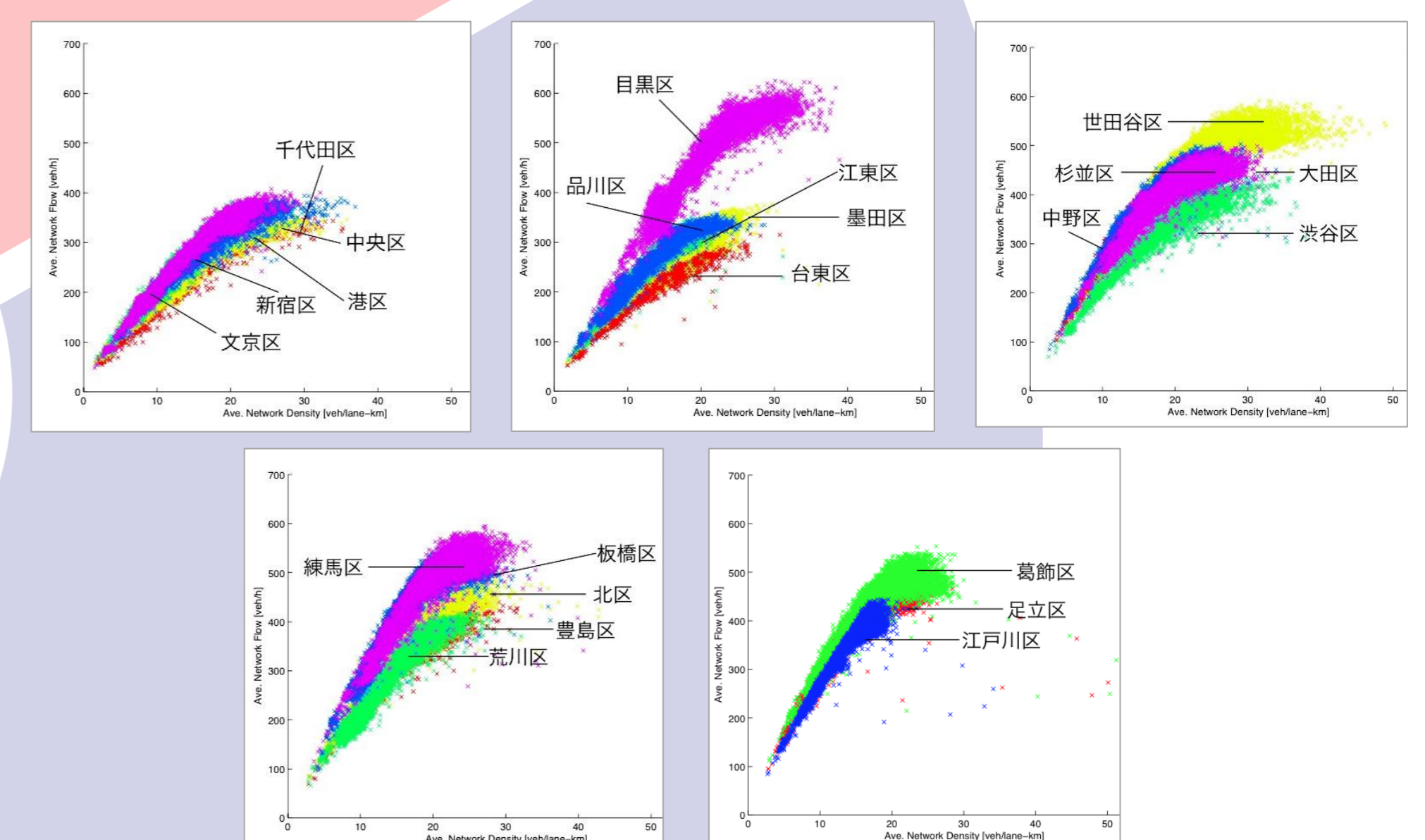


Fig. Macroscopic Fundamental Diagrams (Tokyo 23 special wards)

Basic theories and empirical studies of traffic flow

- Study on gridlock model of urban network traffic flows
- Macroscopic analysis of urban traffic flows
- Empirical analysis of car-following behaviors and free flow speed on expressways
- Stochastic extension of variational theory of traffic flows

Science