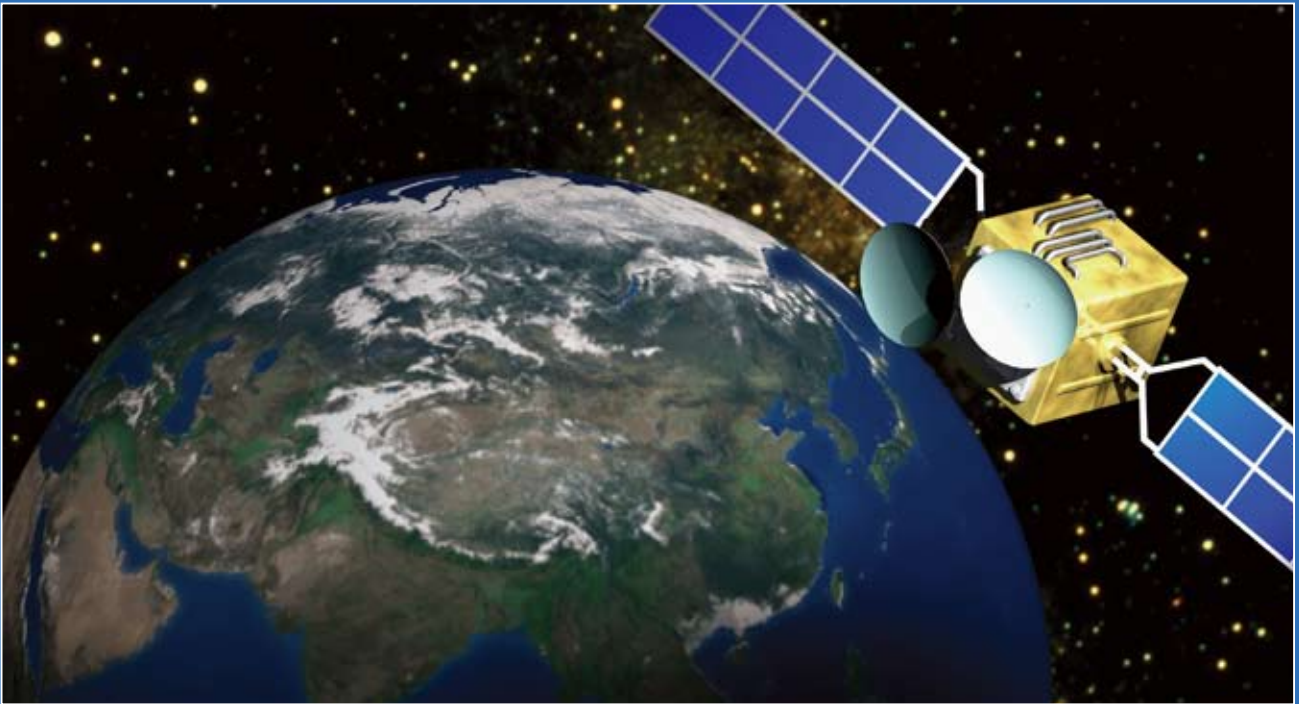


MITSUBISHI

Intelligent Transport Systems

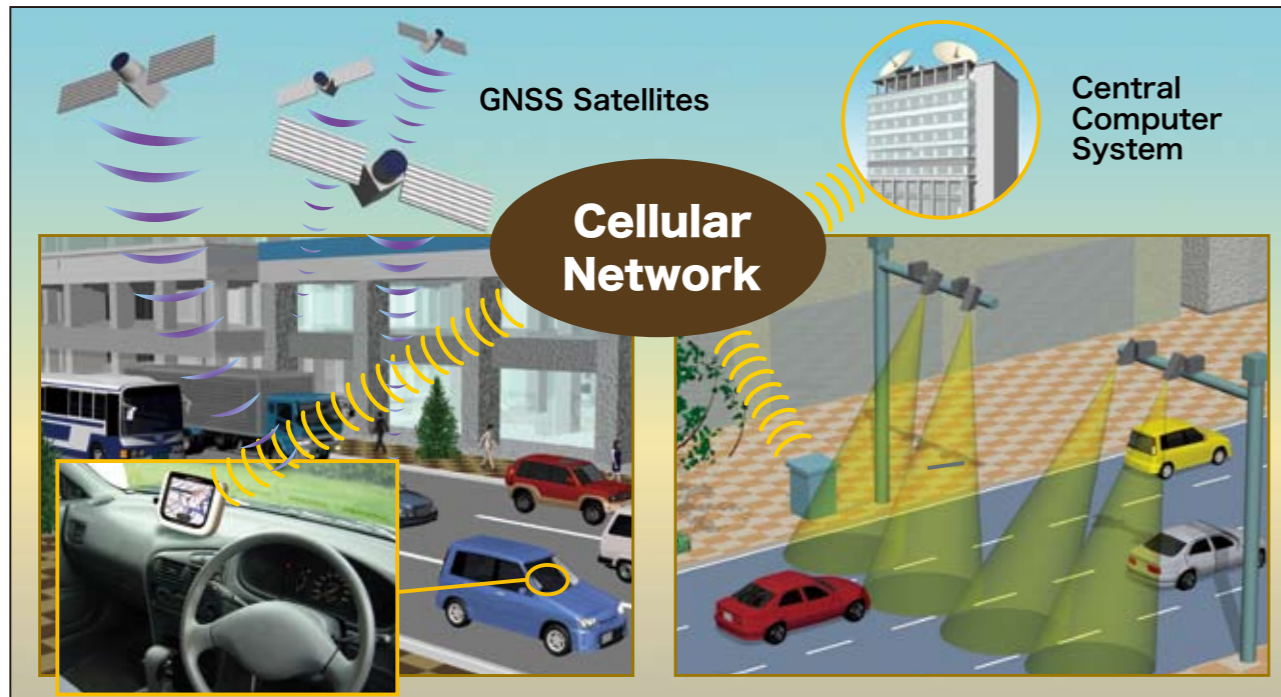


**Global Navigation Satellite System(GNSS)&
Cellular Network(CN) System**

Concept

Mitsubishi's GNSS/CN has following features.

- 1) Accuracy of Positioning
- 2) On-board Unit can work as both "Smart Client" and "Thin Client"
- 3) Optimized current capacity of communication network
- 4) Flexible Enforcement Camera Systems



How does the Smart Client Solution work?

- 1) OBU receives GPS signal from satellites and identifies its location
- 2) When the vehicle enters the charging zone, the OBU starts calculating of time spent in the zone.
- 3) Once the vehicle goes out of the zone, the OBU completes calculation of the toll amount.
- 4) The OBU deducts it from the account in the OBU such as IC cards and send the transaction data to the central system via the cellular network.
- 5) The roadside enforcement cameras take all vehicle images and the system delete images when the system recognizes them as successful transactions. The system sends images of only violated vehicles to the central system for enforcement process.
- 6) The Smart Client concept is privacy-friendly solution and reduces operation cost in central computer system and cellular network.

Key Technologies

1 Cellular Network

Mitsubishi utilizes current cellular network such as GSM, 3G and 3.5G for the system. Since communication speed between the Central System and each OBU is based on this cellular network, Mitsubishi survey each cellular network to provide each client with the best solution.

2 Vehicle Positioning & Tracking

The system obtains positioning data by GPS receiver and Dead Reckoning (DR) in each OBU. Accuracy of positioning goes down naturally when vehicles move on the road among high-rise building. Mitsubishi proposes the most suitable solution to each client after surveying each local situation and the purpose of the system.



<Smart Client OBU>

This map shows the result of actual vehicle tracking.



Orchard Road, Singapore



Shenton Way, Singapore



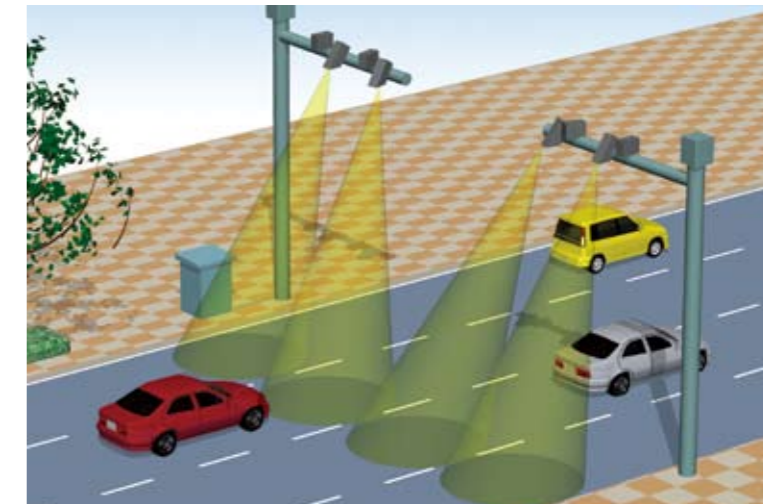
Hong Kong

3 Enforcement Camera Systems

Mitsubishi has three types of Enforcement Camera System.

- 1) Fixed Type :
Camera is fixed on roadside structure permanently.
- 2) Portable Type (Roadside) :
Client can change the enforcement point easily.
- 3) Roaming Type (Unmarked Car) :
Roaming unmarked patrol cars equipped with cameras in it enforce violators.

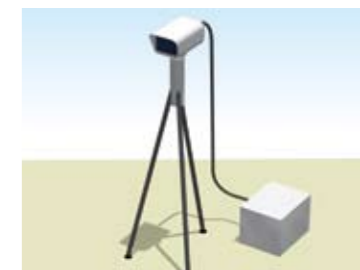
Roadside Fixed mounted type



Roaming Type



Portable Type



※Camera system is equipped in the vehicle and not visible externally

All data collected by three types of Enforcement Camera will be processed by OCR and used for identifying violation vehicle, by comparing transaction data from OBU and result of OCR.



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