

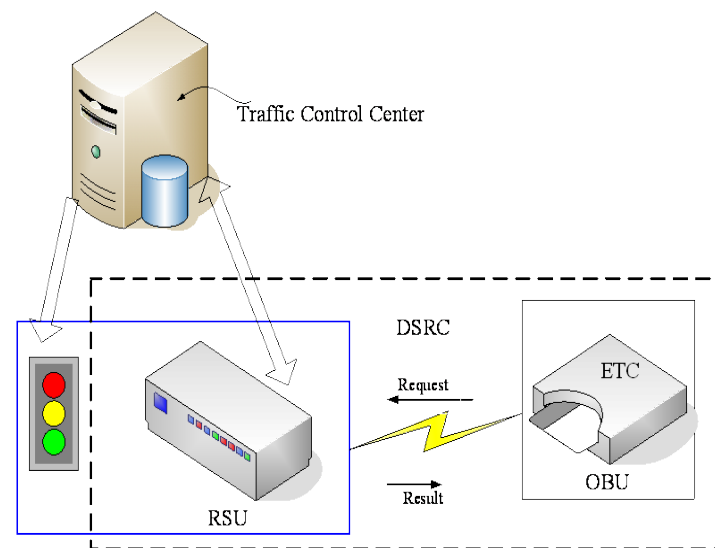
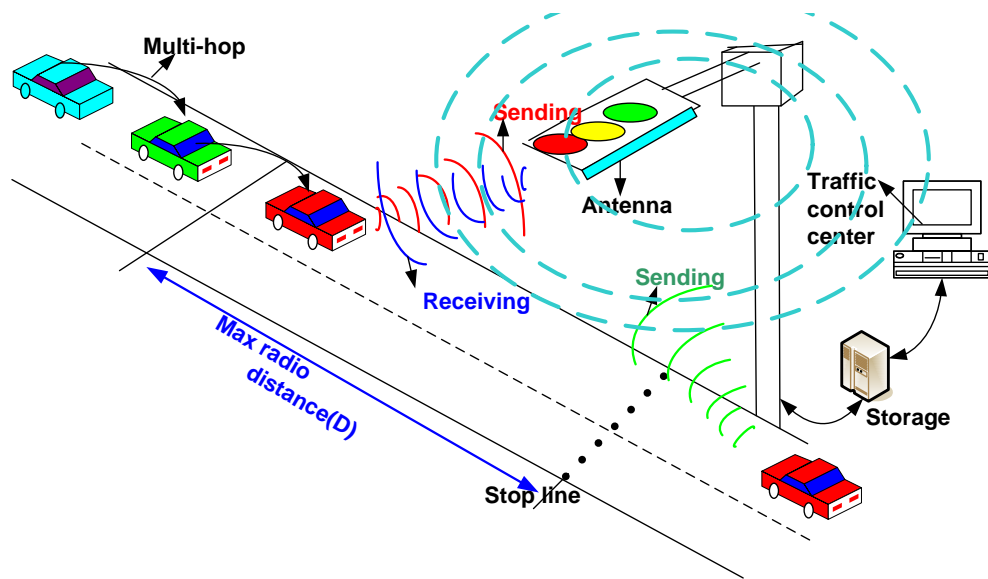
V2X Connected CAR

V2X 車を中心とした通信応用

ETC通信を利用した信号制御方式

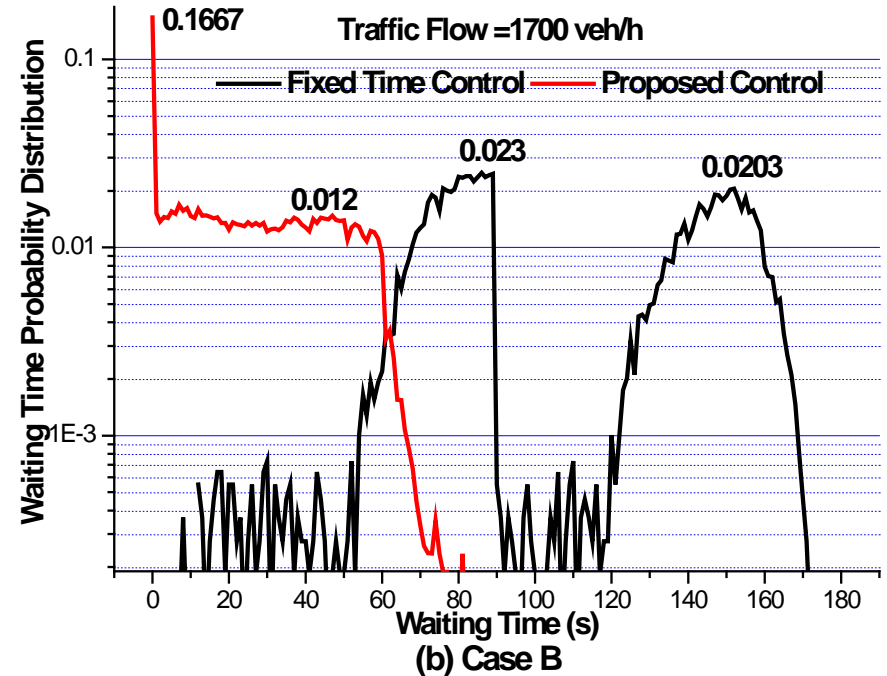
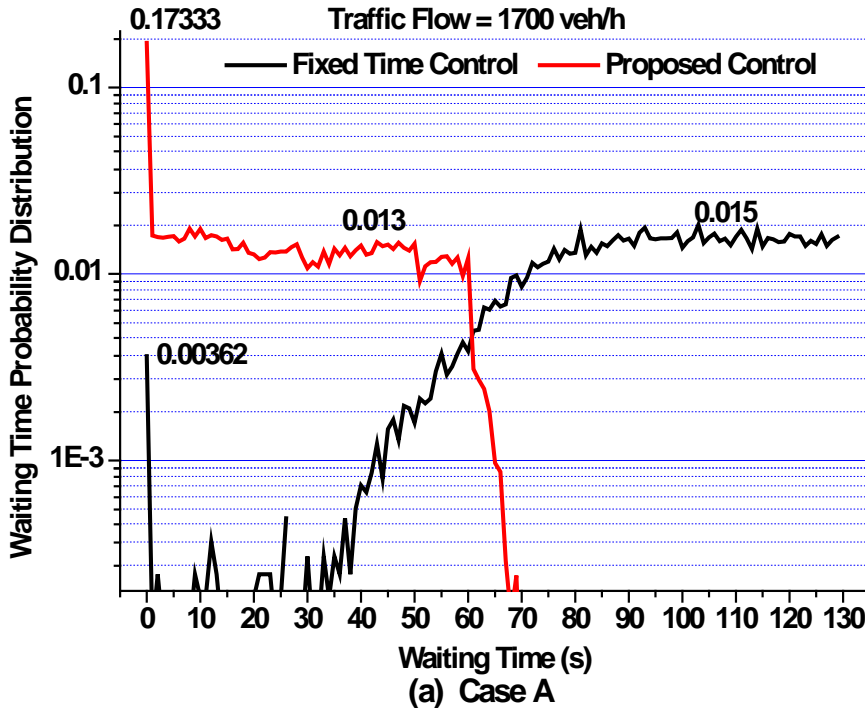
Why use ETC to detect the road traffic flow?

- ETC has bright markets;
- Accurate , Fast response .



Waiting Time Distribution

1. Waiting Time Distribution

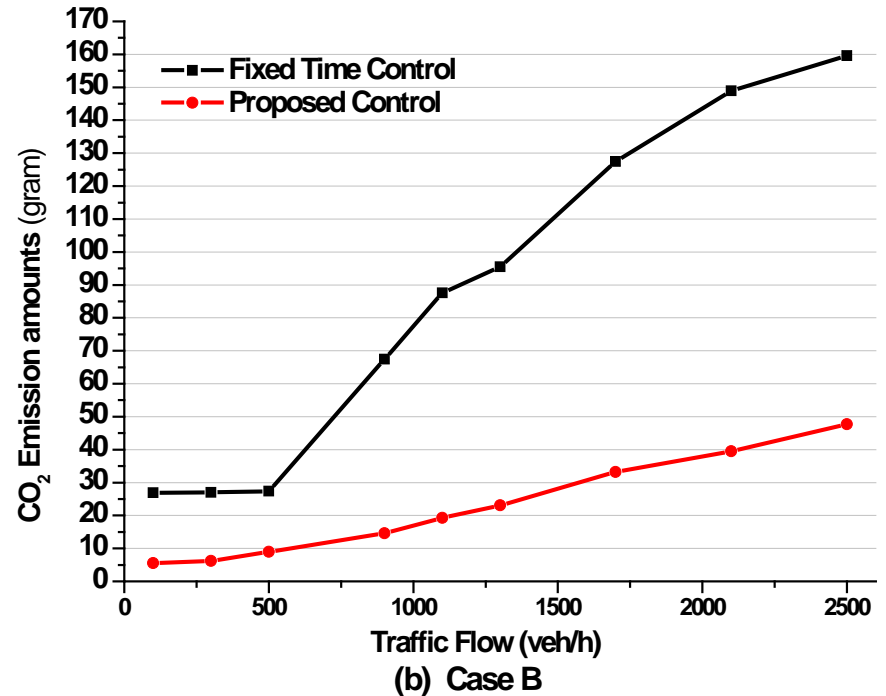
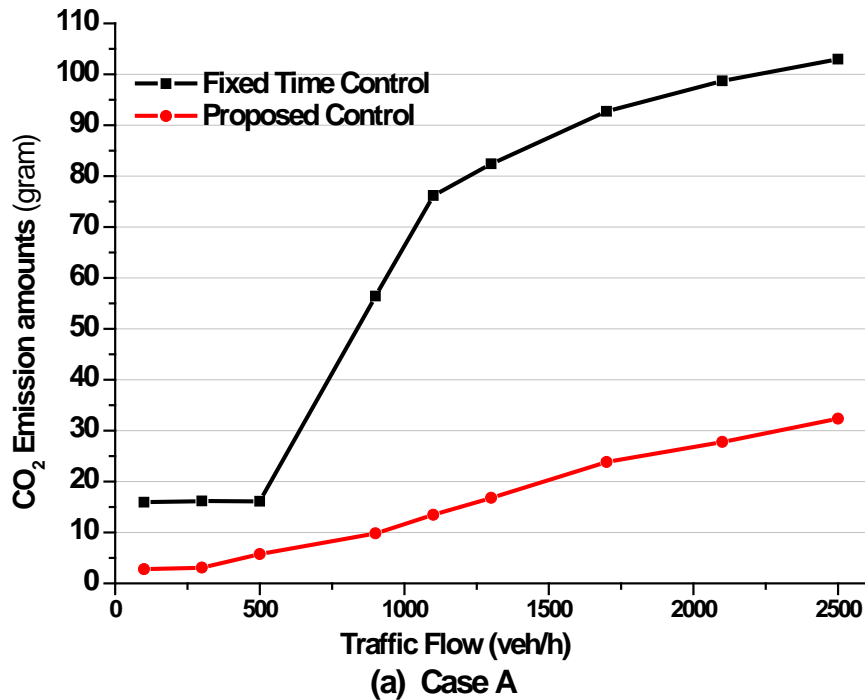


- Non-stop passing: $p=0.173$ & $p=0.0036$ in Case A, and $p=0.1667$ & $p=0$ in Case B
- Maximum waiting time: $\leq 70s$ & $\geq 120s$ in Case A, and $\leq 85s$ & $\geq 170s$ in Case B



CO₂ Emissions

2. CO₂ Emission Amounts and Reductions



CO₂ Reduction Percentages

Traffic Flow	100	300	1300	2100	2500
Case A	82.5%	80.7%	79.6%	71.8%	68.5%
Case B	79.4%	76.9%	75.5%	73.45%	70.8%



a Clustering model

< in progress an idea >

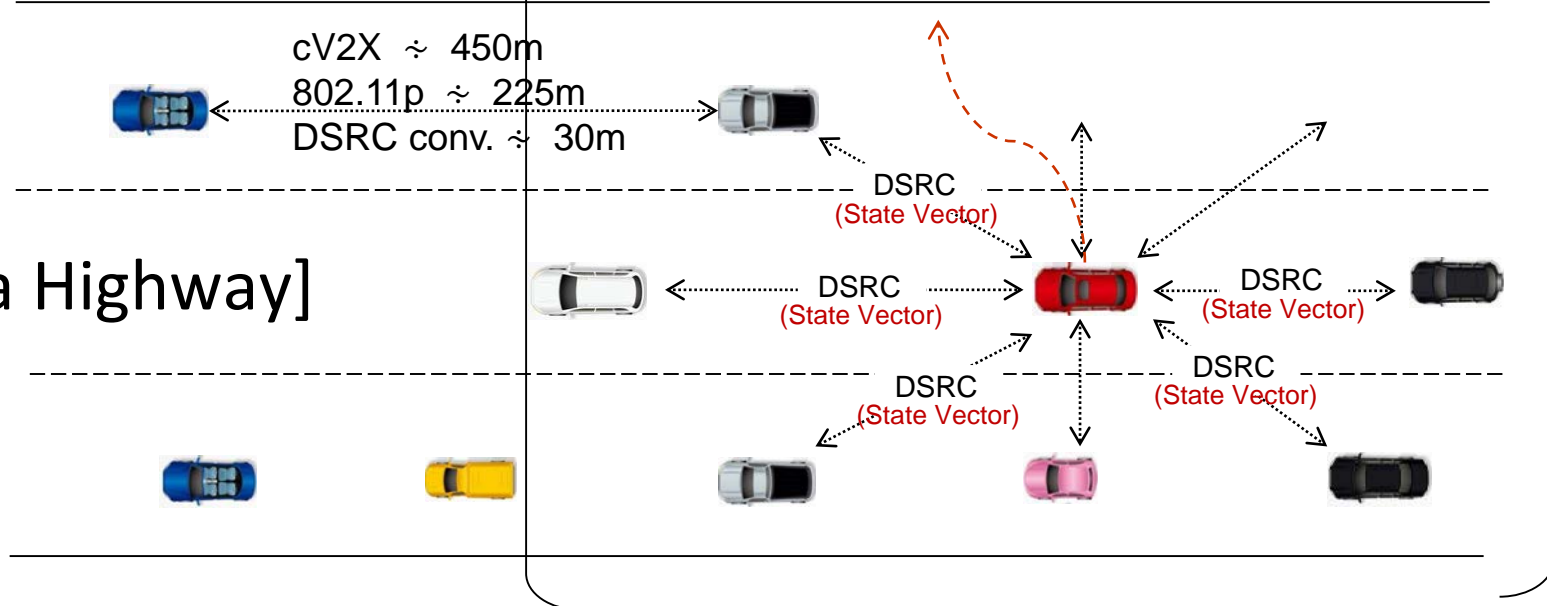
a_{11}	a_{12}	a_{13}
a_{21}	a_{22}	a_{23}
a_{31}	a_{32}	a_{33}

State Matrix

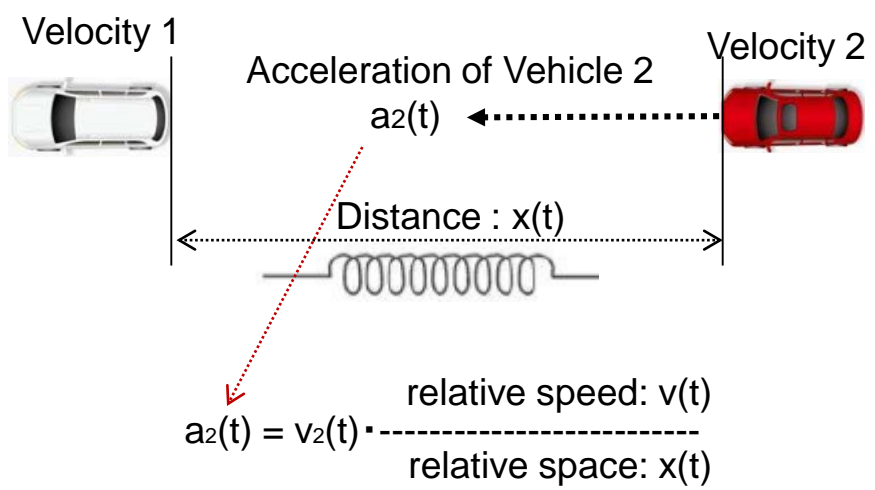
{ Velocity, Distance, Angle, UMTS-RSS, Link-Strength, Vehicle-ID, Group-ID }

State Vector

[In a Highway]



Car Following Dynamics



準天頂衛星システムを用いたレーン別詳細情報 に基づく新ITSシステム

- 準天頂衛星システムは、補強信号の送信等により、これまでの数m程度の誤差だったGPSに比べて、1m程度、さらにはcm級へ測位精度の向上が可能。
- この精度を生かした新しい、V2Xシステムの研究

準天頂衛星システム：準天頂軌道の衛星が主体となって構成される衛星測位システム
QZSS (Quasi-Zenith Satellite System)



JAXSA: Michibiki-QZSS

<http://www.jaxa.jp/projects/sat/qzss/>