NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE
School of Electrical and Electronic Engineering
College of Engineering

SMART NATION TRANSLATIONAL LAB

Automated Charging for Kerbside Parking to Reduce Active Enforcement

Existing Kerbside Parking

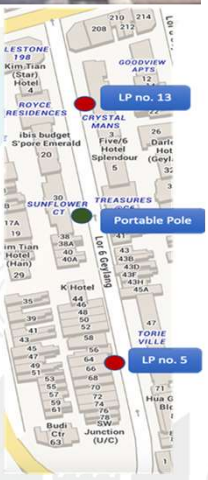
- Current coupon parking, Parking.SG apps and the future E-Parking require the motorist to activate a parking session
- Depends on ground patrol for active enforcement of correct parking fees and compliance with parking rules
- Costly and labor intensive
- Revenue leakage
- No remote alert monitoring capability

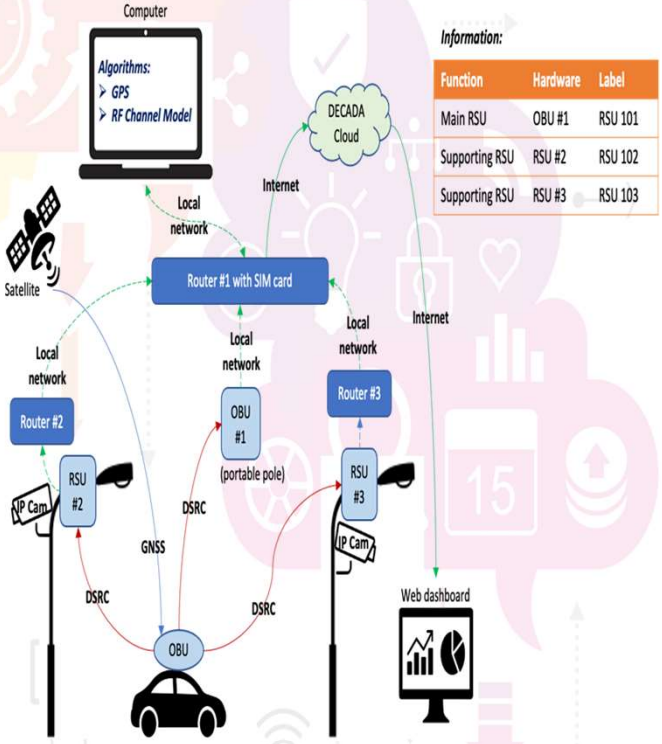
Automated Charging for Kerbside Parking

- To develop a system to automate charging with On-Board Unit (OBU) in vehicle
- To reduce revenue leakage and illegal parking
- POC initiative to demonstrate the position accuracy to within 0.5m of the parking lot in different test settings
- Provides 24/7 monitoring with real-time parking updates on electronic map.

How It Works

- Algorithms in the OBU/RSU compute the position of the vehicle using Differential Global Navigation Satellite System (DGNSS) measurement, machine learning, channel modelling and system integration
- Position and status information of the vehicle determine the parking event
  - Parking charge based on the vehicle type, location and duration of parking session
  - Detect illegal parking event
- Web application to show street parking status
  - Vacant parking lots
  - Occupied parking lots
  - Illegal parking lots





Information:

Function	Hardware	Label
Main RSU	OBU #1	RSU 101
Supporting RSU	RSU #2	RSU 102
Supporting RSU	RSU #3	RSU 103

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Managing Agencies of TRANS Grant

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TRANS Lab Partners

A*STAR Agency for Science, Technology and Research Singapore
Nanyang Technological University Singapore
SMU Singapore Management University

Project Members

***NTU: Assoc Prof LEE Yee Hui**, Mr. LIM Sim Peng, Dr Manandhar Shilpa, Mr Yang Chang, Mr Muhammad Faiz Bin Norazmi, Mr Chew Yee Ching, Mr Krisna Sagar*
URA: Mr Andrew Tang, Mr Marcus Chong GovTech: Mr Christopher Tong