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The Hong Kong Jockey Club Community Project Grant



香港賽馬會慈善信託基金
The Hong Kong Jockey Club Charities Trust

The 9th Global Conference of the Alliance for Healthy Cities

“SMARTER HEALTHY CITIES BEYOND COVID-19”

3-5 November 2021



IMPLEMENTING INTELLIGENT TRAFFIC CONTROL SYSTEM IN SARAWAK

The Greater Kuching Pilot Project

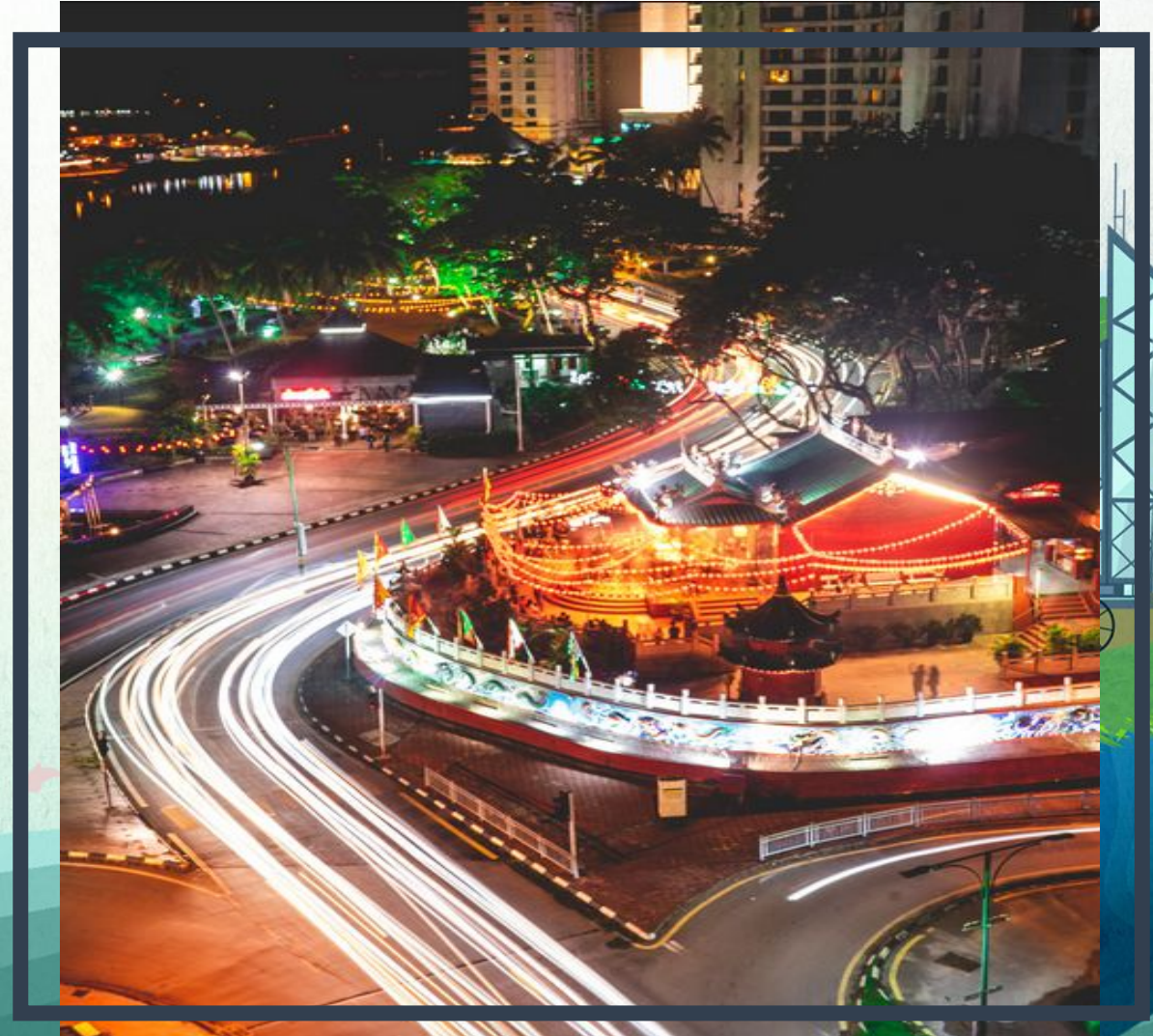
A Case Study For the 9th Global Conference of the Alliance for Healthy Cities (AFHS), Hong Kong - City Design & Environmentally Sustainable

Transport

Date: 04/11/2021

Driven by SMA under the Sarawak Digital Economy Initiative 2018-2022

Implemented by JKR, Municipal Councils, Authorities



Organised by :

健康城市聯盟
中國香港支部



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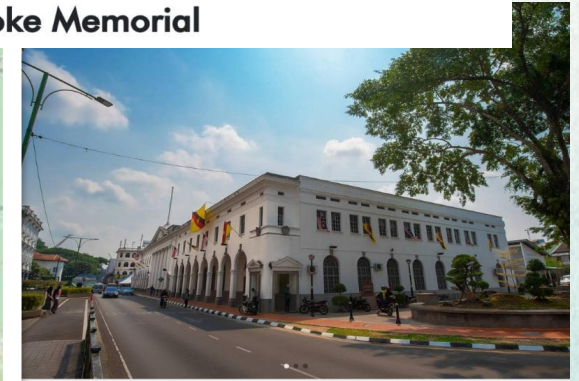
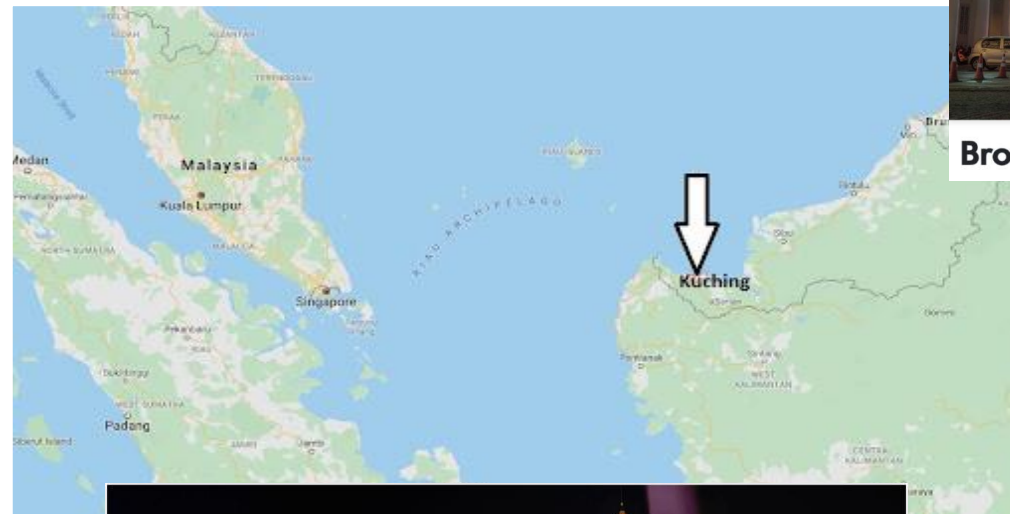
WHERE IS KUCHING ?



Brooke Memorial



Masjid Bandaraya Kuching



General Post Office



Kuching



Kuching

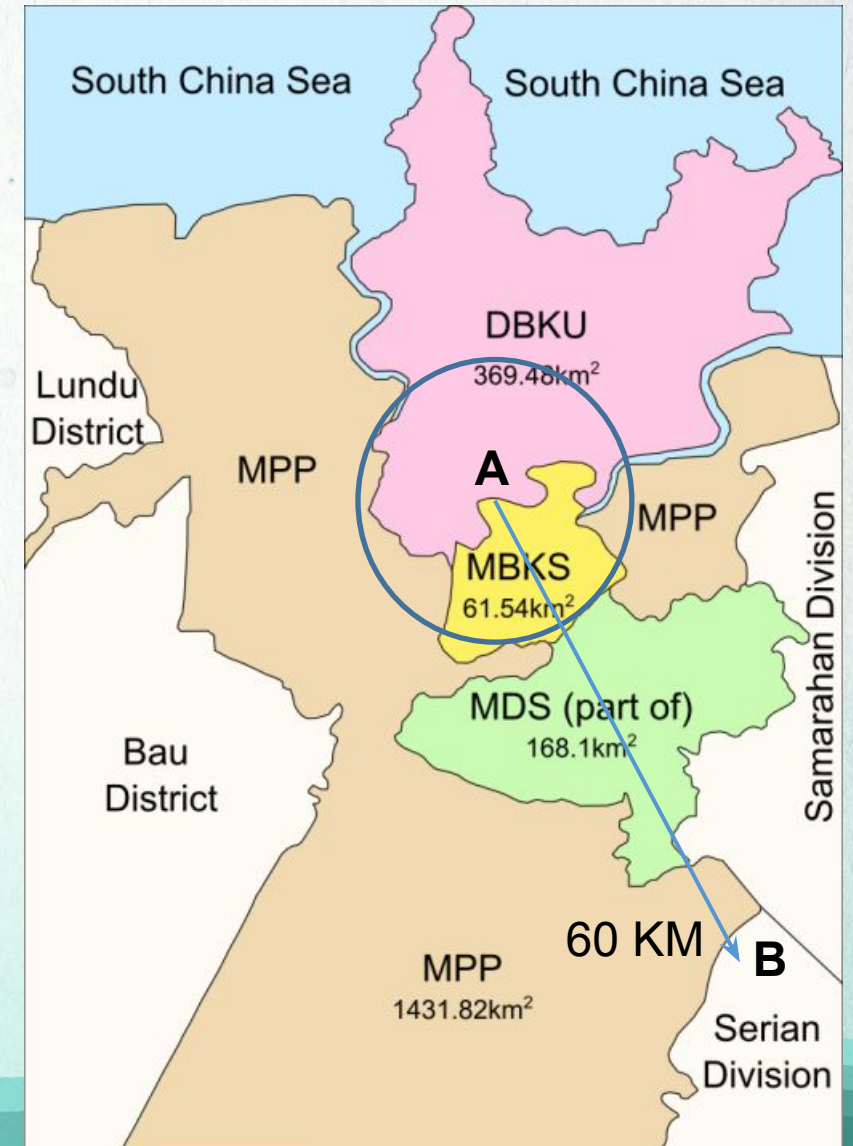


GREATER KUCHING

Kuching is a modern & bustling city with a population of about 712,000. It is also the capital city of Sarawak. Together with the urban areas surrounding metropolitan Kuching, encompassing nearby Samarahan Division and Padawan District, Greater Kuching covers approximately 2,031 sq. Km.

As a whole, the administration of Kuching & Greater Kuching comes under the jurisdiction of 4 administrative authorities, while the traffic control assets are managed by five (5) authorities/agencies viz:

- Kuching North City Hall (DBKU),
- Council of the City of Kuching South (MBKS).
- Kota Samarahan Municipal Council (MPKS)
- Padawan Municipal Council (MPP)
- Public Works Department (JKR)



... the Challenges

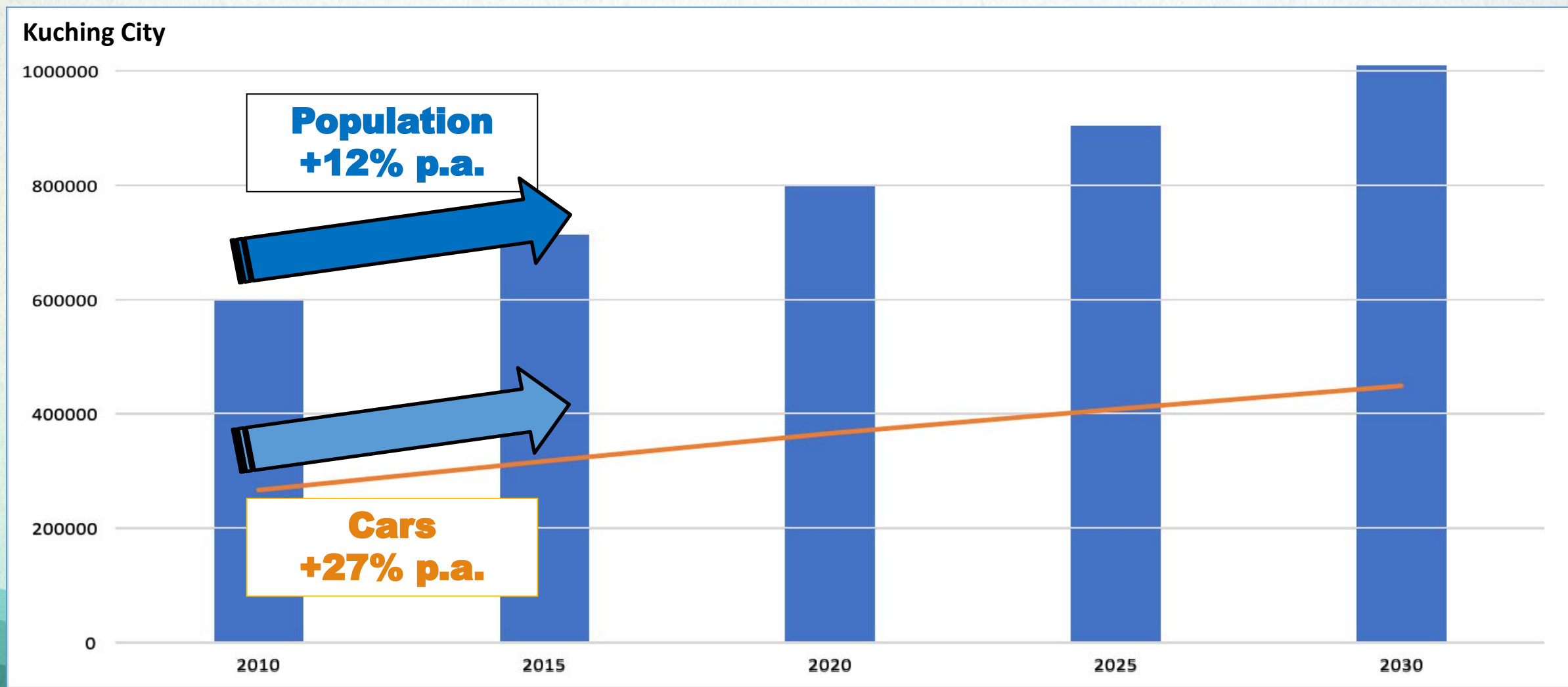
- Road traffic traverses municipal boundaries; **signalized traffic junctions are controlled by up to 5 different authorities/agencies;**
- 140 signalized traffic light junctions alone are in Greater Kuching and approximately 328 traffic junctions in Sarawak. **This number is increasing**
- The signalized traffic junctions between respective authorities jurisdiction were **largely uncoordinated;**
- **Ageing equipment** – Most traffic control equipment installed are as-is and had been in operation since the day being installed, albeit well maintained
- With the rise in population and **growing number of road users** (approx. *370,000 private vehicles ex. motorcycles, lorries, rental cars, buses and taxis), traffic has become sluggish and **jams have certainly become a common experience.**

**The Star, “Traffic congestion in Kuching is getting worse and little is being done about it”, February 2015*



..... trends

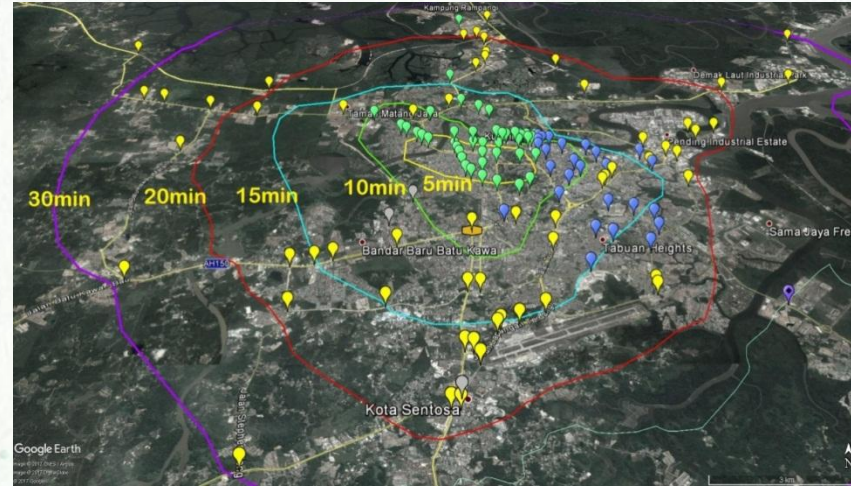
Source: Study on Urban Traffic in Kuching (2010-2030)



KUCHING TRAFFIC

Road traffic issues are much associated with

- Population growth;
- Urbanization – expansion of outer city & suburbs;
- Vehicle ownership rise;
- Vehicle low occupancy;
- Poor public transport: inefficient, poor condition, not punctual, poor route/public info/schedules;
- School bus management;
- Car park insufficiency;
- Die-hard habits :
Illegal parking, improper loading/off-loading goods and people;
- Pedestrian footpath – lacking, poor maintenance;
- Etc.



.. the low hanging fruits –

- ❖ **Implementing area traffic control (Centralised Traffic Control)**
- ❖ **Implementing real-time coordinated and adaptive traffic control**

... traffic & transport improvement approach

- Transport policy;
- Traffic engineering & management;
- Road infrastructure;
- Public transport;
- Non-motorised transport:
 - Walking,
 - Cycling,
 - River transport.
- Traffic engineering & management, incl. **traffic signal optimization**
- **Intelligent Transport System (ITS)**



OBJECTIVES

- Reduced Travel Stops
- Better Travel Times

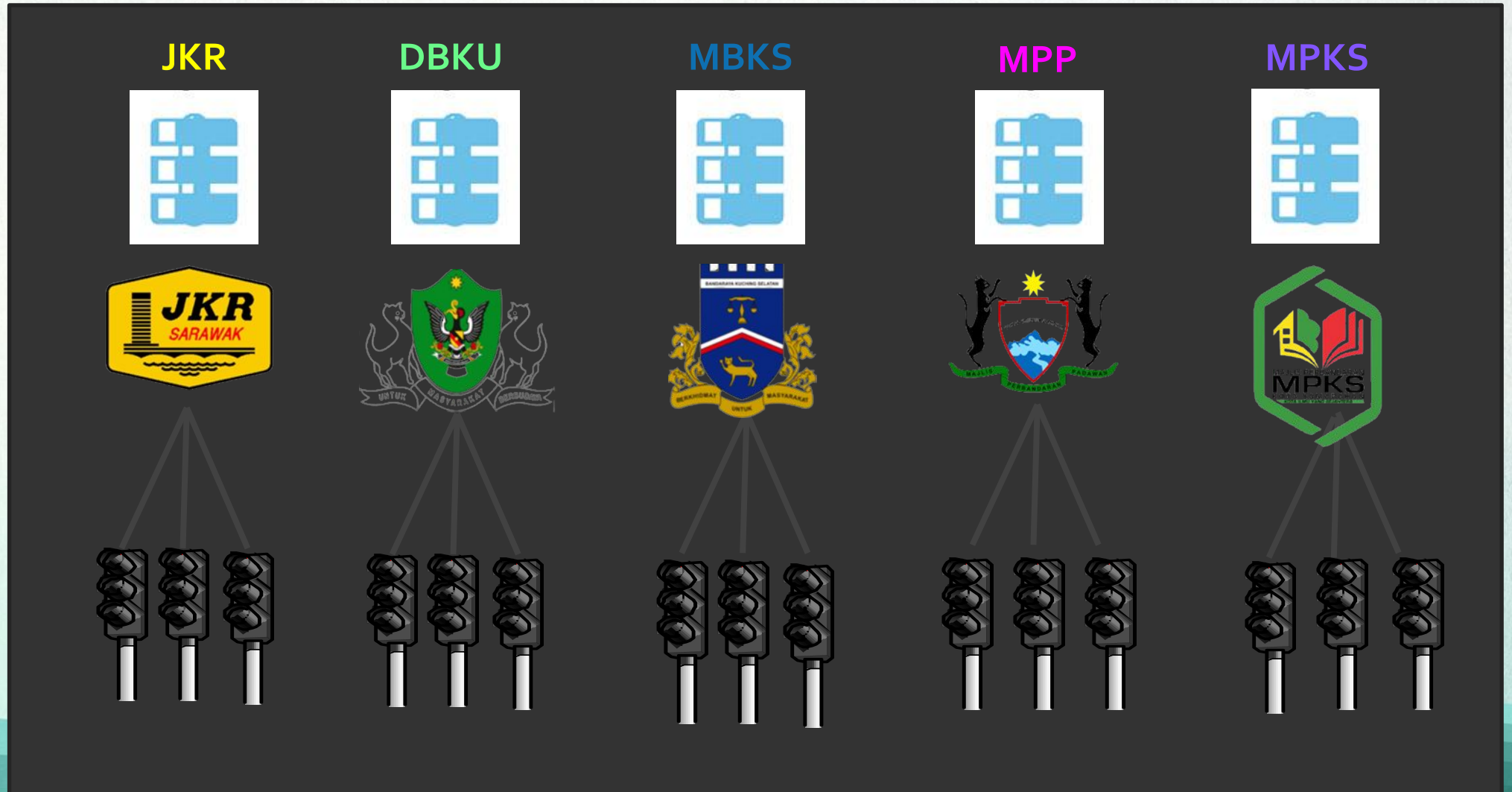


Existing Traffic Light Management

Servers:
Agency owned

System License:
Demo version
(< 20 junctions)

Traffic Lights:
Semi-coordinated /
Non- Coordinated



Aspired Traffic Light Management System

CMServer:

State owned

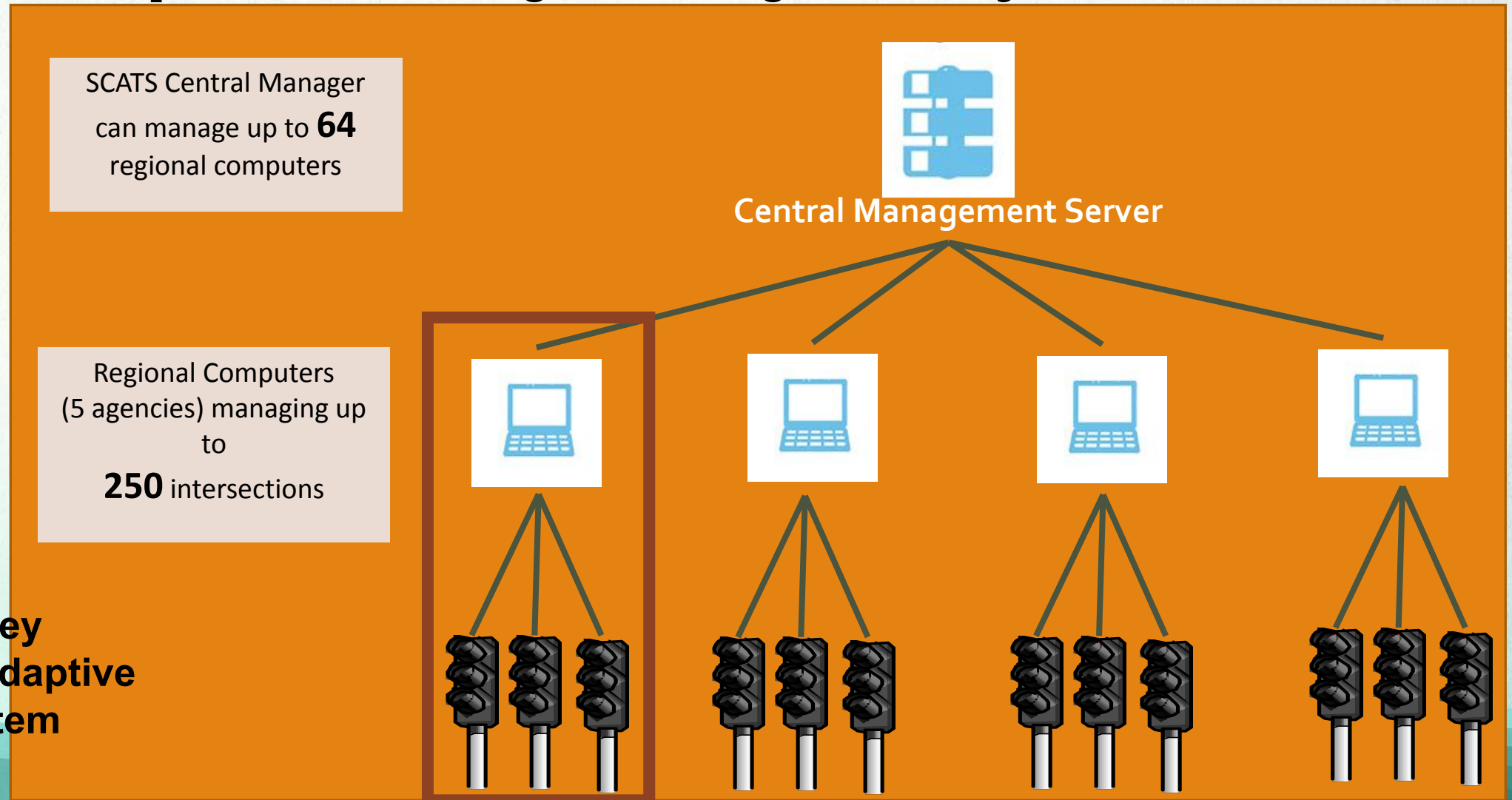
System License:

Full SCATS license
(Up to 16,000 intersections)

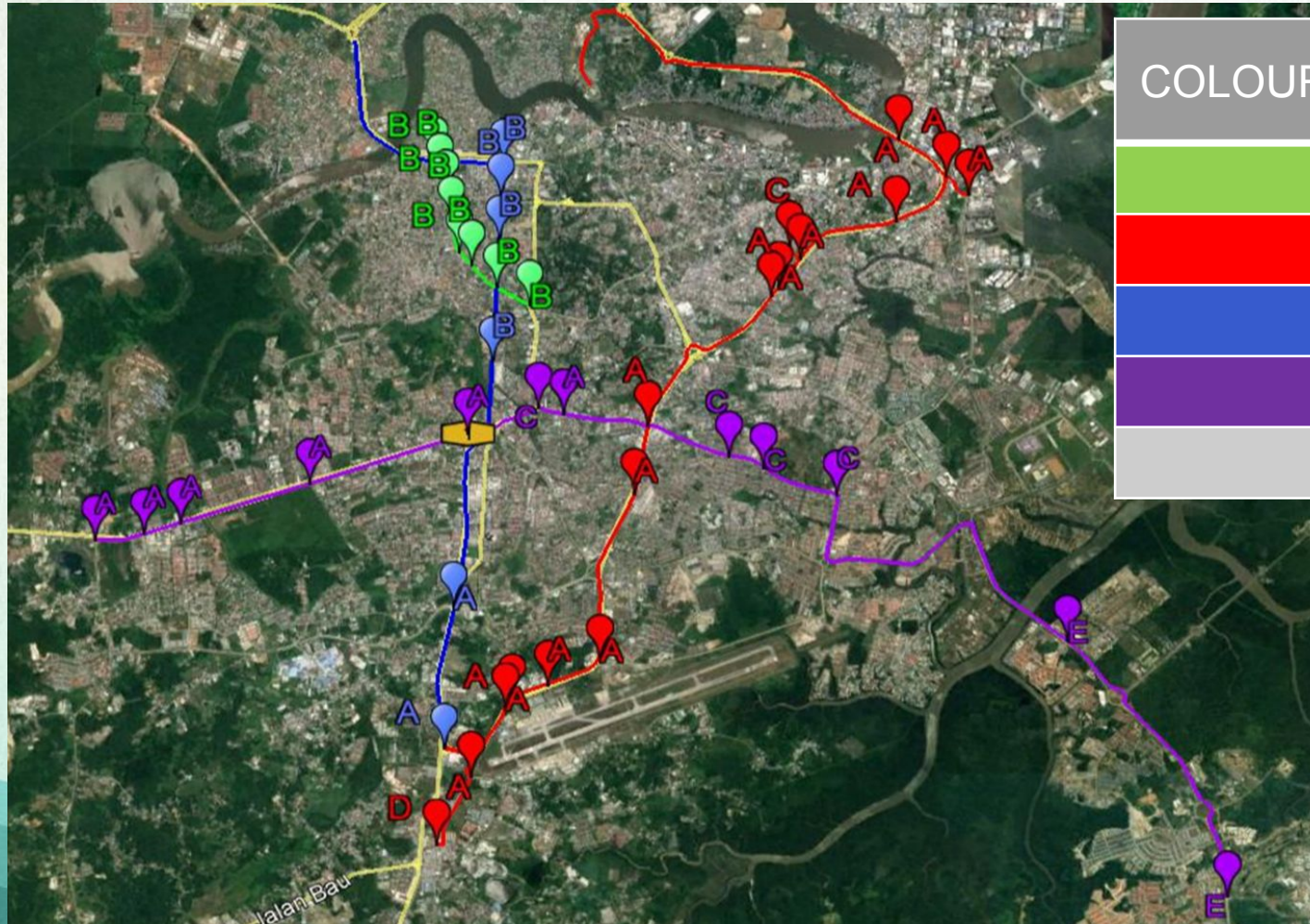
Traffic Lights:

Integrated and coordinated

**SCATS – Sydney
Coordinated Adaptive
Transport System**



KUCHING CITY TRAFFIC CONTROL CENTRE PHASE 1 : 4 PILOT ROUTES



COLOUR	PILOT ROUTE	ROAD (No. of junctions)
■	Route 1	Greed Road (8)
■	Route 2	Airport Rd to Tun Razak (16)
■	Route 3	Mile 6 to Satok Rd. (6)
■	Route 4	Samarahan to Batu Kawa (12)
Total : 42 Traffic Light Junctions		

CODE	AUTHORITY
A	JKR
B	DBKU
C	MBKS
D	MPP
E	MPKS

Key Project Scope

1

Implementing SCATS traffic controller upgrades & SCATS master license

2

Implementing new single lane vehicular-actuated loops

3

Implementing UPS system for specified junctions

4

Implementing CCTV system upgrades

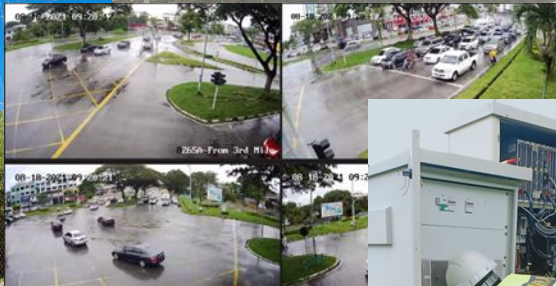
5

Enhancing operator services & implementing

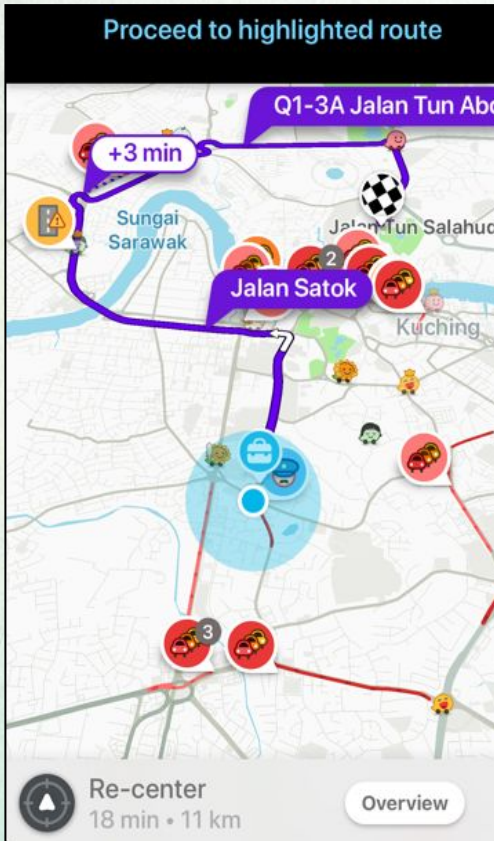
- remote traffic control intervention;
- active customer service platform for complaint resolution;

6

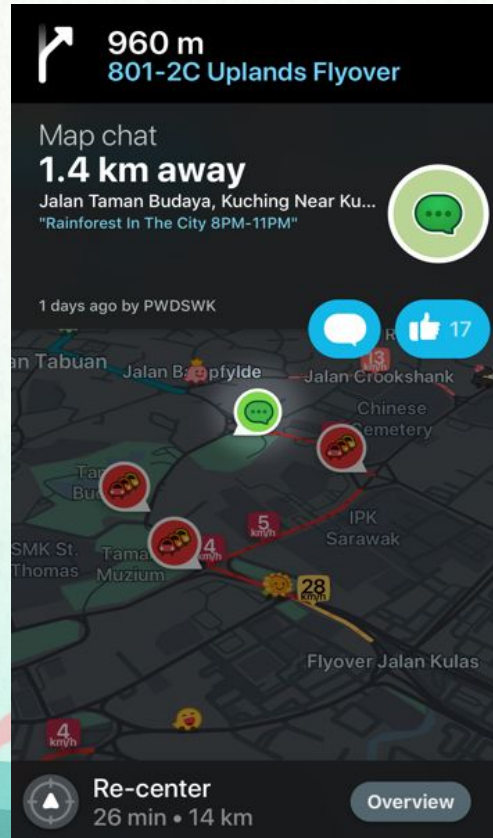
WAZE For Cities collaboration



WAZE FOR CITIES :Data sharing collaboration with WAZE



Public uses WAZE to get best route, estimate time and avoiding delays due to traffic jam. GPS data of traffic contributors gets collected by WAZE and made available to WAZE partner for “birds eye view” traffic monitoring.



Public lodges alerts about real time flood events or potholes onto WAZE. Such alerts get archived and made available to partner or Road maintenance or upgrading purposes.

Sarawak Government Provided Data	WAZE Google Provided Data
Public event information	Traffic data for city traffic light management
Road maintenance activity / road closures / obstruction notice	Wazer reports on pothole, broken traffic light, road-kills, accidents, obstructions, etc.
Tourism spot markers	Public service info on city traffic conditions and forecast in media / Facebook / twitter
Flood evacuation center locations Flood affected roads, evacuation routes, general traffic related information	Collect road usage & traffic big data for policy design and recommendations in Sarawak



Project Outcomes

1

Less traffic stops and reduced wait-times achieved with :

- Coordinated operations of traffic signal junctions (eg “green-wave” synchronization),
- Managing traffic in real-time with adaptive timing of traffic control signals by leveraging on **SCATS Technology**

2

Manual remote intervention capability at the Control Centre for traffic junctions based on CCTV feedback; capturing traffic incidences e.g. accidents, etc. with CCTV implementation;

3

Improved traffic junction performance reliability with the incorporation of Uninterruptible-Power-Supply (UPS);



Project Outcomes

4

More effective roads and traffic planning capability through big data acquisition and smart analytics of **SCATS (Sydney Coordinated & Adaptive Transport System)**

5

Improved road & traffic information delivery utilizing technology:

- ❑ Route planning and information disseminated through smart billboards or VMS – Variable Messaging Signages
- ❑ Utilization of Waze/Google Maps platform for information dissemination;

6

Enforcement by relevant authorities enhanced through value-added technologies such as Automatic-Incident-Detection (AID), Automatic Number Plate Recognition (ANPR), etc. - **Future**

7

Enabling priority service for buses, emergency vehicles, Autonomous Rapid Transit (ART), etc. when interfaced with multi-modal transportation navigation platform & system - **Near term**



Preliminary SCATS Performance Results :

33% reduction in no. of stops*

34% reduction in travel times*

** off-peak data*

Information from SCATS literature - SCATS achieves:

28% reduction in travel time

25% reduction in stops

15% reduction in emissions

12% reduction in fuel consumption

25% easing congestions



**SCATS Technical Support Centre
Regional Traffic Control Centre**

In conclusion...

**Reduced Travel Stops +
Better Travel Times =
Improved Mobility Experience +
Greener Environment**

Smart Traffic Lights towards a happier and cleaner city



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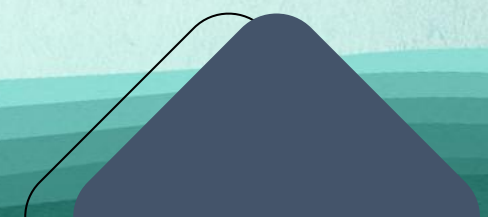
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THAN YO KU



TOWARDS SMART CITY



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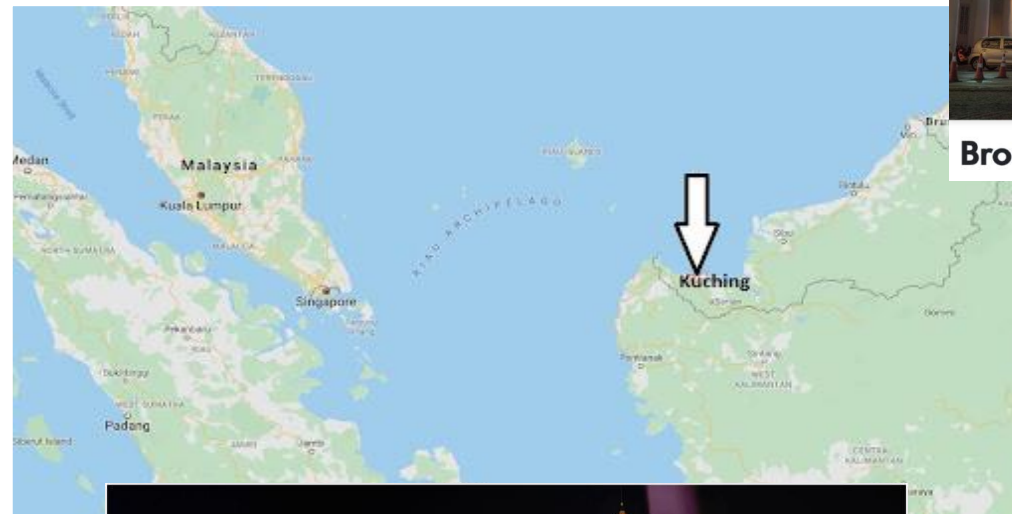
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