

SINGAPORE'S EXPERIENCE IN SMART TRANSPORTATION & INFRASTRUCTURE and ROAD SAFETY

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TRAFFIC MANAGEMENT IN SINGAPORE

Road Traffic Situation

- Land Transport Authority (LTA)
- Traffic Police (TP)
- Multi-Pronged Approach of 3 Es & 1 L
-Education, Engagement, Enforcement & Law

Land Transport Authority



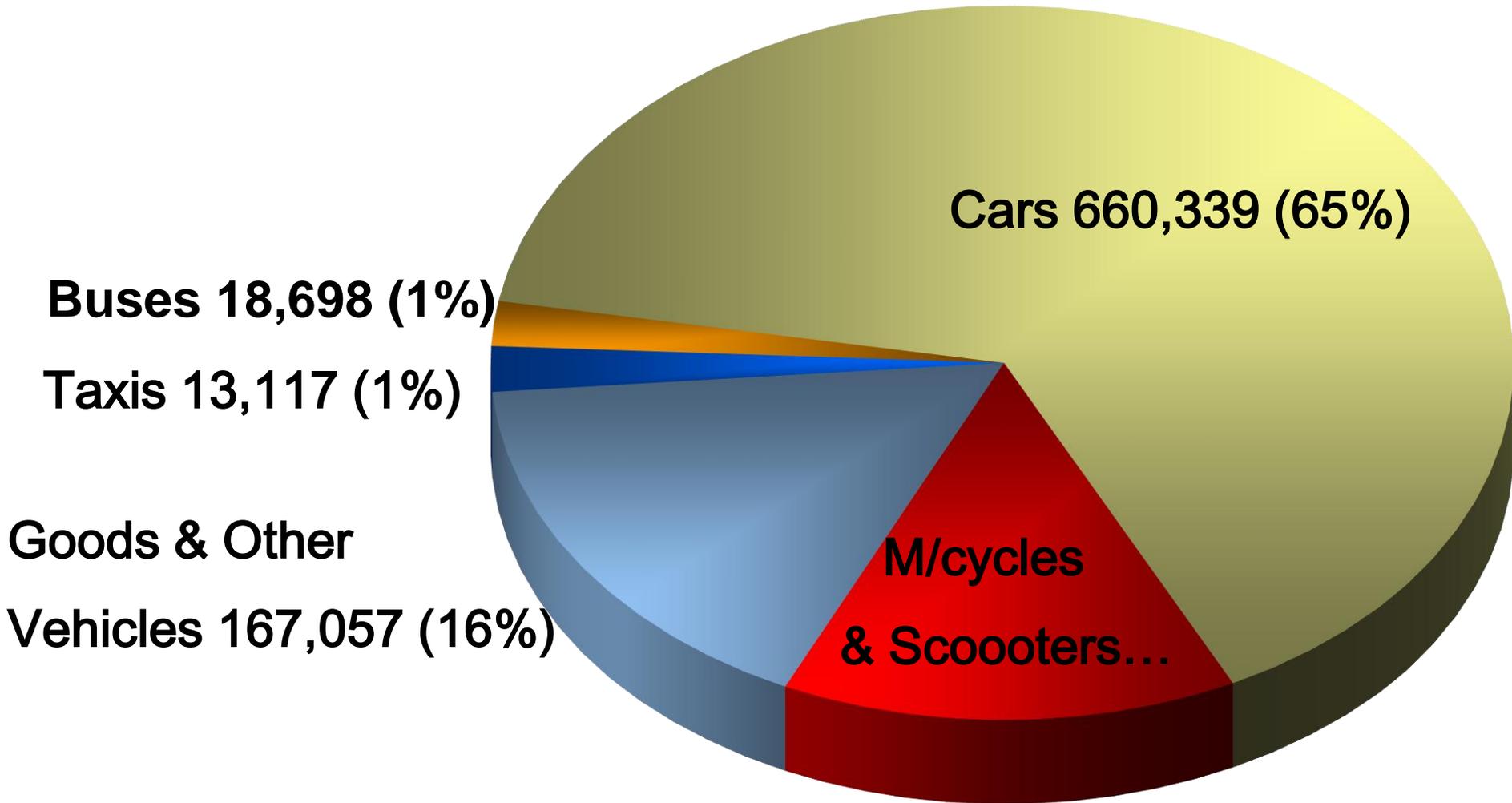
Road Traffic Situation

Land Area	735.7 Sq.km
Population (as of Jun 2025)	6.11 mil
Citizen	3.66 mil (60%)
Permanent Resident	0.54 mil
Non-Resident	1.86 mil
Expressway Length	163 km (101 miles)
Road Lane Length (km)	9,500km (12% of total land areas)
Rail Length: 267.5 km	MRT -238.9 LRT-28.6



Rail Network **Doubles** from 178km today to **360km** in 2030
8 in **10** households within **10-min** walking distance of a rail station

Vehicle Population : 1,007,094 (as of 2024)



OFFICIAL (OPEN) / NON-SENSITIVE

Table 2: Road traffic accident casualty rates, 2015 – 2024

Year	Human Population [1]	Total Casualties	Casualties		Casualties per 100,000 Human Population		Motor Vehicle Population [2]	Casualties per 10,000 Vehicle Population	
			Fatalities	Injured	Fatalities	Injured		Fatalities	Injured
2015	5,535,000	10,563	151	10,412	2.73	188.1	963,759	1.57	108.0
2016	5,607,300	10,828	141	10,687	2.51	190.6	954,717	1.48	111.9
2017	5,612,300	10,074	121	9,953	2.16	177.3	953,097	1.27	104.4
2018	5,638,700	10,142	124	10,018	2.20	177.7	959,938	1.29	104.4
2019	5,703,600	9,951	118	9,833	2.07	172.4	965,547	1.22	101.8
2020	5,685,800	6,752	83	6,669	1.46	117.3	964,299	0.86	69.2
2021	5,453,600	7,347	107	7,240	1.96	132.8	982,459	1.09	73.7
2022	5,637,000	8,549	108	8,441	1.92	149.7	991,464	1.09	85.1
2023	5,917,600	9,077	136	8,941	2.30	151.1	996,732	1.36	89.7
2024	6,036,900	9,484	142	9,342	2.35	154.7	1,007,094	1.41	92.8

[1] Total population comprising Singapore residents & non-residents at mid-year. [Source: Singapore Department of Statistics]

[2] Number of motor vehicles as at mid-year. [Source: Land Transport Authority]

Connecting people & places, enhancing travel experience

VISION - A People-Centred Lane Transport System

- Create a people-centred land transport system meeting the diverse needs of growing population & expanding economy
- Aim to make public transport the preferred choice by making it faster, reliable & more frequent
- Keep traffic moving smoothly on our roads, committed to managing road use by optimising road networks & enhancing safety



1 Land Transport Infrastructure & Traffic Management Systems

- 1.1 Intelligent Transport Systems (ITS)
- 1.2 Electronic Road Pricing System (ERP)
- 1.3 Traffic Signs & Schemes



2 Vehicles Management

- 2.1 Vehicle Quota System (VQS)
- 2.2 Additional Registration Fee (ARF)
- 2.3 Registration, inspection & modification



3 Public Transport System



1 Traffic Management Systems

1.1 Intelligent Transport Systems (ITS)

Sophisticated systems maximise road network efficiency capacity, manage traffic flow & make roads safer

Ground recovery crew to assist motorists in distress, provides real-time traffic update thru electronic signs, radio broadcasts, MyTransport.SG smartphone app & website

Components include ITS Centre, i-Transport, Expressway Monitoring & Advisory System (EMAS), EMAS Arterial, Junction Electronic Eyes (J-Eyes), Green Link Determining (GLIDE) System, Green Man+, Your Speed Sign, Parking Guidance System



1.2 Electronic Road Pricing System (ERP)

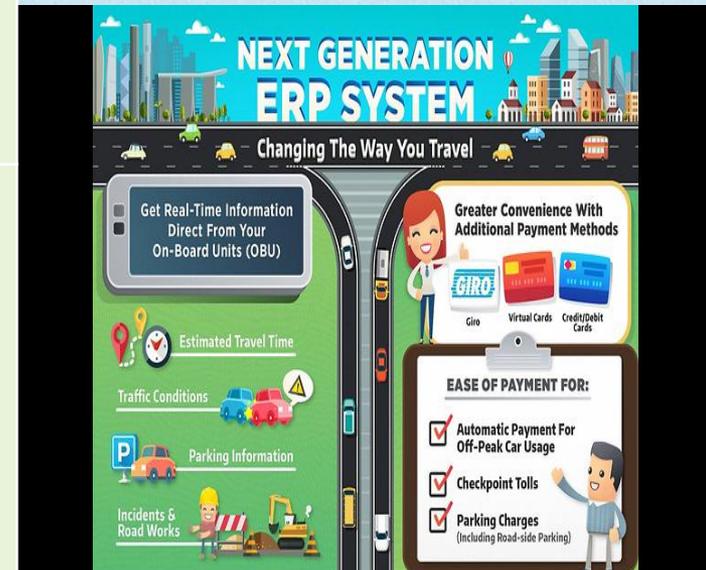
- Introduced in 1998, based on pay-as-you-use principle to deduct charges from smart-cards in in-vehicle units
- Rates vary for different roads & time periods depending on traffic conditions to encourage motorists to change mode of transport, route or time of travel
- New \$556-million Global Navigation Satellite System (GNSS)-based ERP system will be operational from 2020, provides island-wide coverage without gantry, real-time traffic info, alert drivers of priced roads in advance, distance-charging



HOW DOES ERP WORK?

1 CASHCARDS ARE INSERTED INTO IN-VEHICLE UNITS (IUs).

2 EACH TIME A VEHICLE PASSES THROUGH AN ERP GANTRY, ERP CHARGES ARE DEDUCTED FROM YOUR CASHCARD VIA SHORT-RANGE RADIO COMMUNICATION.



1.3 Traffic Signs & Schemes

(1) Bus Lane scheme (normal & full-Day)

Gives buses priority during restricted hours since 1974, enabling buses to enter & exit stops more smoothly & faster rides for commuters



(2) Bus Priority Box scheme

Mandatory Give-Way to Buses, similar conceptually to zebra crossing, except that it is meant for buses



(3) Left Turn On Red scheme

Allows motorists on minor road to turn left onto main road during red signal when it is safe to do so



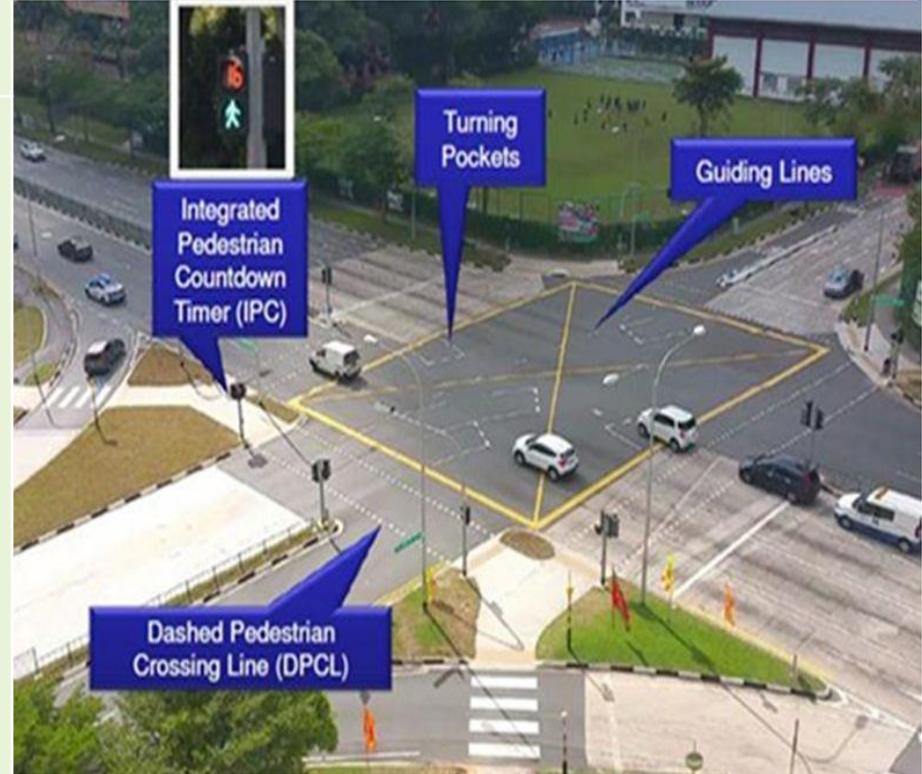
(4) More safety measures at 1,600 right-turn junctions

- Red-amber-green arrow lights will replace discretionary right turns at all 1,600 junctions by 2022. It is observed that a **40% reduction in traffic accidents** involving right turns at junctions with RAG arrows.

- Features to boost road safety :
“Give Way to Pedestrians” signs

- 1) integrated pedestrian countdown timers
- 2) turning pockets
- 3) guiding lines
- 4) dashed pedestrian crossing lines
- 5) lighted road studs

Ultimately, safety of road users are paramount.



Enhanced Safety within School Zone & Silver Zone

(5)

- Identified by signs at the start & end of Zones. Additional demerit point imposed on motorists who commit offences below within Zones from 2014 :

Serious Offence	Fine	Demerit Point
Speeding	≥ \$130	≥ 4+1
Careless driving	\$150	6+1
Inconsiderate driving	\$170	9+1
Beating red light	\$200	12+1



- Silver Zone scheme started in 2014 in residential areas with high senior resident population. It will be expanded to 50 locations by 2025

Safety measures :

- Silver Zone & 40kmh speed limit signs
- Solar-powered flushed LED road studs at raised zebra Crossing
- 2-stage crossings so pedestrians can take "refuge" at centre divider
- Humps, narrowing roads
- Extended green man timings at crossings
- 2-way roads to one-way
- 3D road markings to make road appear narrower



MISSION

To enhance the safety of road users thru education, engagement & enforcement

VISION

To make Singapore roads the safest in the world

*Making Singapore
Roads Safest*



Education

- 3 driving centres provide safe driving education to nurture learners to become socially responsible drivers
- Driver Improvement Points System (DIPS)
- Traffic Police & partners to educate public to embrace road safety thru campaigns, exhibitions, talks & creating platforms for community involvement in road safety efforts :
 - 1) Safer Roads Campaign (Mar)
 - 2) Road Safety Month (May)
 - 3) Ride Safe Campaign (Aug)
 - 4) Shell Traffic Games (Nov)
 - 5) Anti-Drink Drive Campaign (Dec)
 - 6) Road Safety Champions Scheme



Safer Roads Campaign “Choose Graciousness”

- TP & SRSC, in collaboration with Singapore Kindness Movement & LTA, launched Safer Roads Campaign at Our Tampines Hub in Mar 2017
- The partnership further strengthens road safety messages with elements of kindness where road users will be made to understand that conscientious behaviours can lead to a safer road environment
- Tagline positively engages & influences road users’ behaviours by highlighting to them that similar to an act of kindness, every road user can choose to be more courteous & considerate on the road, making the roads safer for everyone



Road Safety Month

- TP & SRSC, with support from LTA, People's Association, Ministry of Education, InfoComm Media Development Authority (IMDA) & Automobile Association, launched the campaign in May 2017
- Focus road safety efforts on vulnerable road users - motorcyclists, elderly pedestrians & children
- Emphasises the importance of cultivating good RoadSense & observing road safety measures



Ride Safe Campaign – “Gear Up, Ride Safe”

- Held in conjunction with Singapore Bike Show in Aug 2017. National footballers & their families attended to spread message to motorcycling community of 2 aspects of rider’s safety
- **“Gear Up”** to protect themselves by wearing protective riding gears, such as jackets, covered shoes & gloves
- **“Ride Safe”** aimed to inculcate good riding habits, e.g. maintaining safe braking distance, steering clear of blind spots of larger vehicles



Traffic Games

- Inter-school event (since 1958) held in Nov 2018 at Road Safety Community Park, included fun & interactive training sessions for children on road safety. They gain hands-on experience as they role-play various road users in a safe environment
- After the preliminary rounds held from Jan-Sep, 12 schools made it to the finals, & Yumin Primary School emerged as champion to win the Shell Challenge Trophy
- 3 new educational animation videos produced by Nanyang Polytechnic, to share road safety advisories for children, were unveiled. It will be used as educational tool during road safety talks



Engagement

Partners & Stakeholders

1	Singapore Road Safety Council
2	Land Transport Authority
3	Ministry of Education
4	Vehicle Associations, e.g. Heavy Vehicles, Logistics Companies, Public Transport, etc.
5	General Insurance Association
6	Media
7	National University of Singapore
8	Nanyang Technological University



Ministry of Education
SINGAPORE



• ROAD-USER GROUPS

- Pedestrians
- Cyclists
- Motorcyclists & pillion riders
- Motorcar drivers & passengers
- Commercial vehicle drivers & passengers



YOU CAN HELP!



SRSC is incorporated as a charity and granted Institution of Public Character (IPC) status.

You and your organisation can support SRSC's educational efforts towards safer roads in Singapore for everyone.

Cash donations made to "Singapore Road Safety Council" will qualify for tax deduction of 2.5 times.

FOR MORE INFORMATION:

Please visit the SRSC website: www.srsc.org.sg

Please contact:



SINGAPORE ROAD SAFETY COUNCIL

Singapore Road Safety Council

c/o Traffic Police Department
10 Ubi Avenue 3 Singapore 408865

Tel: (65) 6547 6597

Fax: (65) 6547 6353

Email: enquiries@srsc.org.sg

SINGAPORE ROAD SAFETY COUNCIL

Partnering With The Community For Safer Roads



Singapore Road Safety Council

The Singapore Road Safety Council (SRSC) fosters cooperation and coordinates with key agencies and road safety stakeholders to raise public awareness on road traffic accident prevention through information and education campaigns.

Enforcement

- **Road Traffic Act (Chapter 276) 1961** provides the legislative powers to regulate law & order on the roads
- Strict laws & schemes put in place to improve the overall road safety, e.g. Driver Improvement Points System (DIPS)
- Stringent action taken by officers against errant traffic offence violators as well as assistance & support given by civic-minded public in reporting errant traffic offenders



INTELLIGENT TRANSPORT SYSTEMS (ITS)

- This web of **data collection technologies** forms a dynamic, real-time pictures of the ebb and flow of a population moving through their daily lives.
- **ITS uses the sensors, traffic and control systems, and data analytics, to maximise road network efficiency capacity, monitor and manage traffic flow and our roads safer.**
- The vision, key strategies and focal areas of ITS is set out in the Smart Mobility 2030 master plan, a roadmap - **jointly developed by**
- **LTA and the Intelligent Transportation Society.**

Examples on how ITS enhances Road Safety

- Green Man Plus (Green Man+) to give more time for crossing for seniors at pedestrian signals
- Green Man+ is a **LTA initiative** that **provides elderly pedestrians and persons with disabilities with more time to cross the road** at selected pedestrians crossings.
- Benefits :
- **Increased safety, Greater Independence, Inclusive urban planning & Seamless integration** making it a **user-friendly system.**



Land Transport Authority

 DO NOT CROSS

 CROSS WITH CARE

Flashing Green Man

 DO NOT START TO CROSS

 Press For Green Man

 Tap for Longer Crossing Time

Tel: 1800 - 2255 582

Land Transport Authority

Please Tap Here



EXPRESSWAY MONITORING & ADVISORY SYSTEM (EMAS)

- **The EMAS system in Singapore** is a LTA initiative that uses a network of cameras and electronics signboards on expressway to manage traffic accidents and provide real-time information.
- **To ensure timely assistance** to breakdown/accidents on high-speed roads, enabling quick response from EMAS recovery crews to clear obstructions.
- **To give forewarning** to prevent secondary accident.
- **Motorists can get traffic information** through the signboards.
- **How EMAS works:** Monitoring, Information Dissemination, Incident Management & Time Updates.
- **EMAS Recovery Service:** Assistance, Free Service & Vehicle Removal

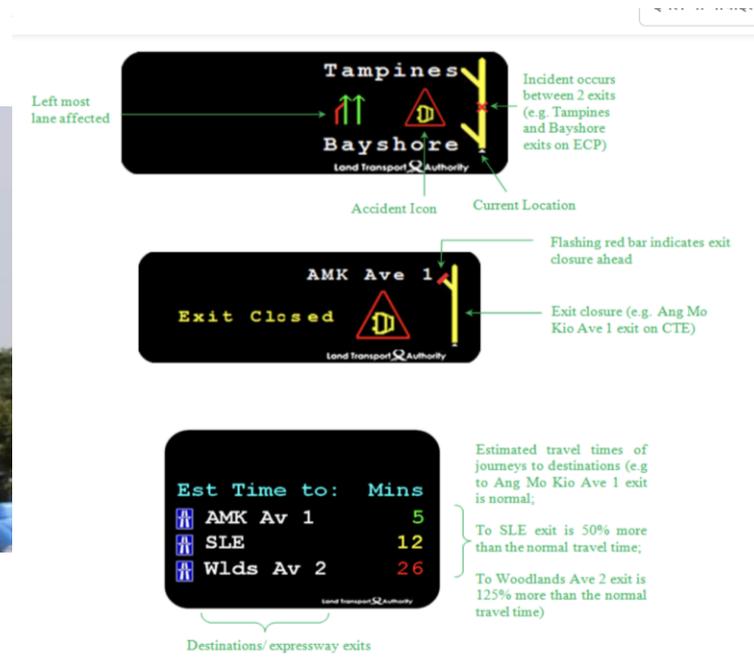
Expressways Monitoring and Advisory Systems



From Text to Graphic for ease of comprehension



https://www.lta.gov.sg/content/ltagov/en/who_we_are/statistics_and_publications/Connect/EMAS-gency-experts.html



ON-BOARD UNIT (OBU)

- An On-Board Unit (OBU) in Singapore is part of the **Electronic Road Pricing (ERP) 2.0 system, a satellite-based electronic road pricing (ERP) system** that replaced the old, gantry-based system since 1970s.
- **Functionality :**
- **Electronic Road Pricing and Parking Charges**
- **Real-Time Traffic & Road Information (Bus Lanes operations, Speed limits, Friendly Streets, Plant Puring)**
- **Certain Available Car Parks Information**
- **Road Safety Information (Silver Zones, School Zones)**
- **Lane or Event - Road Closure (e.g. F1 Singapore Grand Prix 2025)**

Police Camera Zone

School Zone



Conclusion

- **The Intelligent Transport System (ITS) leverages on Integrated, Real-Time Traffic Information**
- iTransport – All of ITS data is connected to iTransport which is an integrated and unified platform, that which **makes sense of the data for traffic monitoring and disseminates the information for incident management** in the ITS Operations Control Centre (OCC)
- **ITS Operations Control Centre (OCC) :**
- Working 24/7 to help maintain smooth traffic, the ITS OCC monitors traffic and manage incidents on our expressways and road tunnels via the i-Transport and various ITS.
- **Safety is a key consideration in our road infrastructure planning and design.**

Currently, **Singapore is using the Green Link Determining System (GLIDE)**

Also developing a **Cooperative and Unified Smart Traffic System(CRUISE)**

- Safety is a key consideration in our road infrastructure planning and design. **Road Safety is a shared responsibility. Everyone has a part to play to keep the roads safe for all.**
- Beyond leveraging on the Intelligent Transportation System and Improving infrastructure, the **Land Transport Authority (LTA) will continue to work with the Traffic Police (TP) and the Singapore Road Safety Council (SRSC) on educational programmes to promote road safety awareness and encourage responsible practices among all road users.**