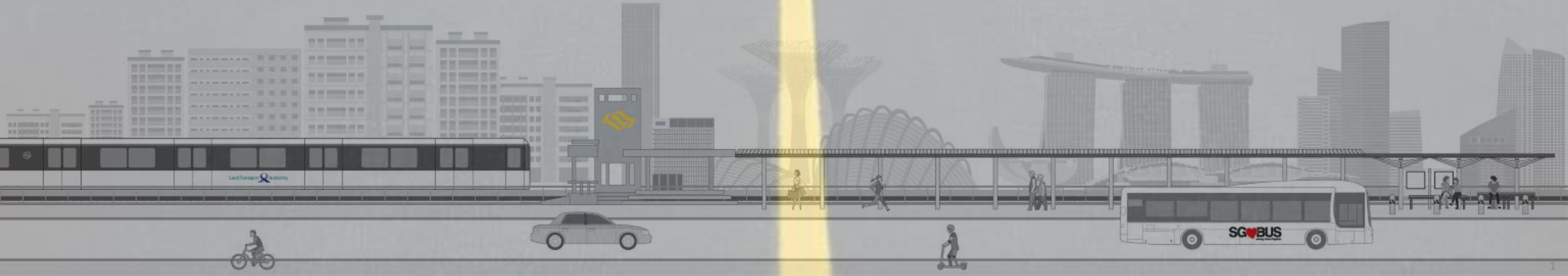


Problem statement

To check the riding quality index (IRI) of the road surface after repairs using a portable device



Outline

1 Riding Quality (IRI) and its requirements for expressways

2 Background

3 Key requirements of proposed solution

4 Timeframe for development of proposed solution/product

5 Procurement need of agency

6 Market potential for proposed solution/product

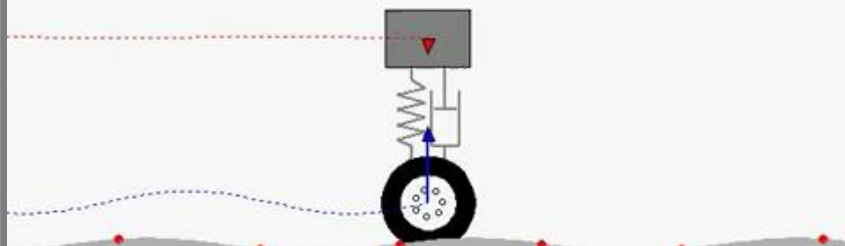
7 Evaluation Criteria

1 Riding Quality (IRI) and its requirements for expressways

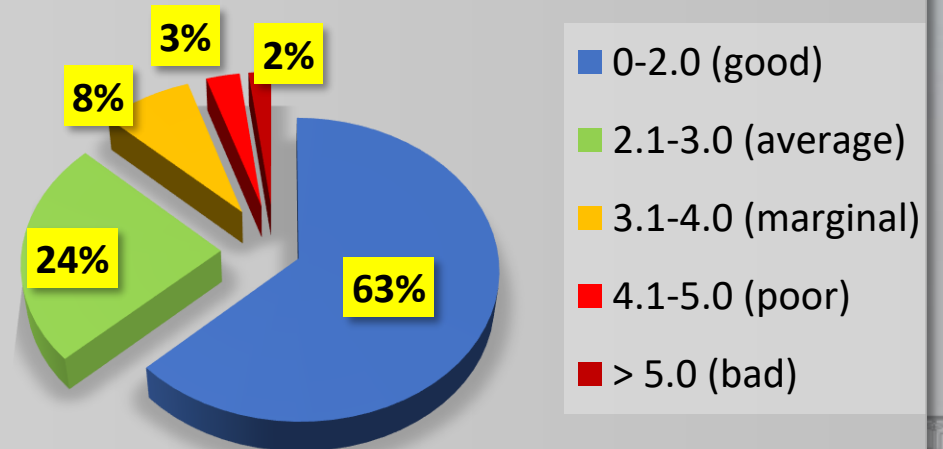
Riding Quality is measured in terms of IRI (International Roughness Index) & obtained from longitudinal road profiles, also simply refers to the riding comfort of drivers on the road

The requirement for newly resurfaced expressways is IRI \leq 2 mm/m (based on every 100 m section of the road)

IRI = 4.461



Lower IRI \Rightarrow Better riding quality



IRI results for expressways in yr 2017

2

Background

Currently, there are **NO** riding quality checks done on the road surface after road repairs/reinstatement works

Why is it important?

Contractors can check for any **necessary remediation works** immediately before opening the road to traffic

Road maintenance team can **monitor the quality of road repair works** done by the contractors

2

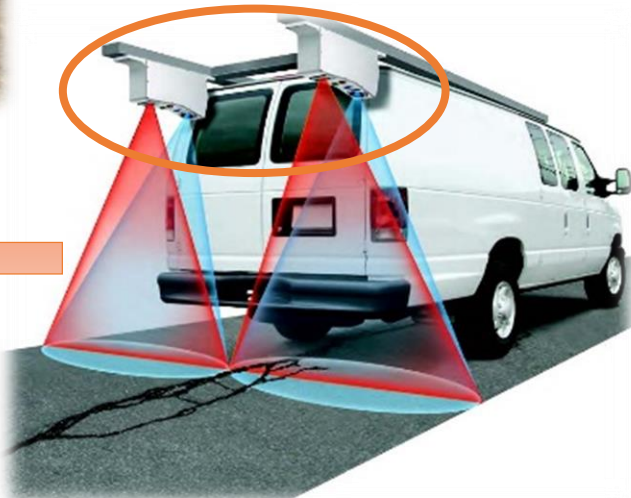
Background

In general, the riding quality of the roads (i.e. expressways and major arterial roads) are monitored **yearly** at a **network level** for maintenance planning



High Speed Laser Profiler

- Equipped with a distance measurement unit, GPS system and profiler with 15 laser points



Laser Crack Measurement System

- Equipped with two 3D laser unit which gives about 4000 measurement profiles

Laser sensors which produce high accuracy results

Comply to Class 1 requirements of the latest ASTM E950/E950M.

Usually owned by road condition survey company, whose services would be engaged by the Authority

Costly

Low measurement frequency

3

Key requirements of proposed solution

Key requirements

Physical requirements

- Lightweight and portable
- Hand push/vehicle mounted device

Technical requirements

- Can measure the road profile, compute and show the riding quality of the road pavement
- Results accuracy shall be comparable to **at least Class 3 requirements of the latest ASTM E950/E950M**

Cost requirements

- **\$5000 and below** so that contractors are able to purchase the equipment with ease

4 Timeframe for development of proposed solution/product

- **Successful correlation** to the riding quality in terms of IRI
- **\$5000 and below**

Q2 2020
(Prototype)

Q4 2020
(Pilot Deployment)

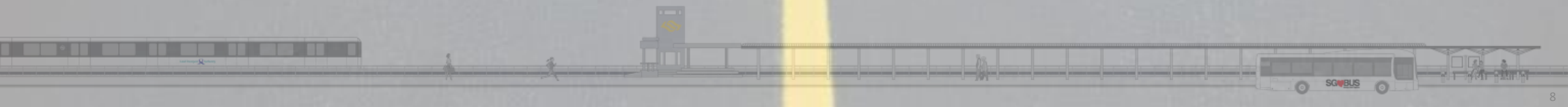
Q3 2021
(Implementation)

- Product should be **easy to operate and maintain**
- Able to measure IRI with the accuracy comparable to **at least Class 3 requirements of the latest ASTM E950/E950M**

5

Procurement need of agency

- Ultimately, the equipment must be **relatively affordable** for contractors to purchase with ease
- **Frequent use of the equipment** - road repair/reinstatement works are carried out daily due to the dynamic nature of our roads
- If the prototype is able to derive successful correlation IRI results by 2Q 2021, it would potentially be **included in our road maintenance contracts by 3Q 2021**



6

Market potential for proposed solution/product

- These solutions may be extended to **other regulatory bodies such as utility agencies** to check for IRI on road pavements after utility laying, maintenance etc.









7

Evaluation Criteria

Evaluation Criterion	Weightage (%)
1. Technical feasibility of solution	30
2. Innovation	20
3. Economic Feasibility and Commercialization Potential (Include development cost and final product cost)	30
4. Capacity and Expertise to Execute Project	20
Total Score	100



THANK YOU

-  www.lta.gov.sg
-  WeKeepYourWorldMoving
-  LTAsg
-  LTAsg
-  LTAsingapore
-  LTA Singapore

