

# **Safety and Efficiency Benefits Derived from RTMS and PBS**

SABOA Conference 2024

# Solo Bus

Length: 13.8 m

GVM: 26 ton

Passengers: 78



# Single Articulated Bus

Length: 22m

GVM: 35 ton

Passengers: 114



# Bi-articulated Bus

Length: 27m

GVM: 36 ton

Passengers: 137



# Risks can be mitigated by:

- Operating PBS vehicles
  - Becoming RTMS accredited
- ➔ Which brings about a whole range of Benefits !

# Performance-Based Standards

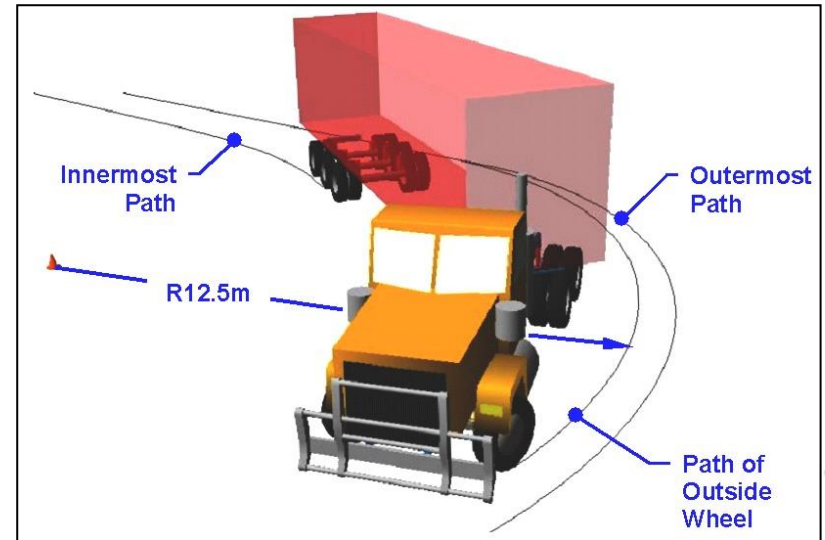
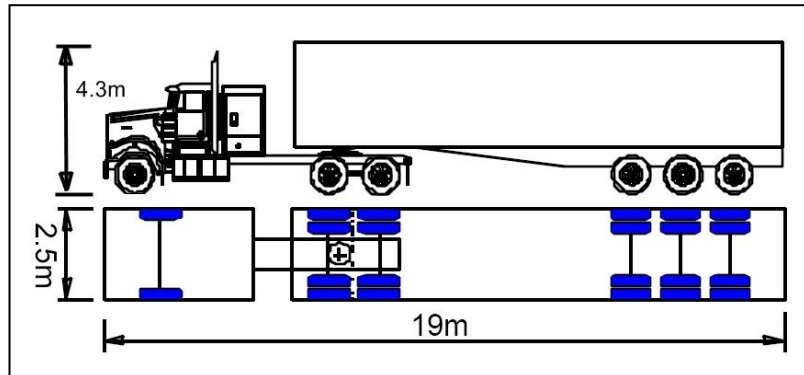
A PBS or Performance-Based Standards scheme for heavy vehicles has been successfully implemented in Australia as a voluntary alternative regulatory framework which now form the basis of PBS vehicles in South Africa.

PBS uses simulation and / or physical testing to establish and verify vehicle performance which results in:

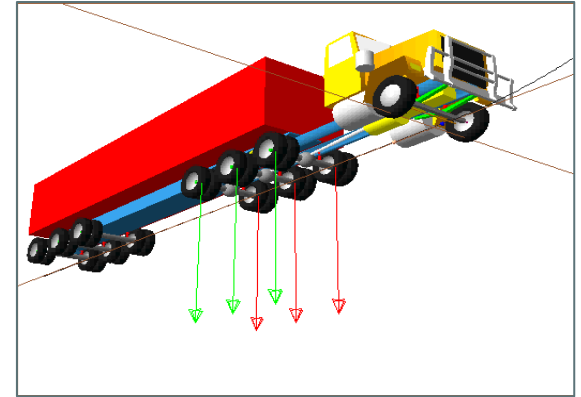
- Improved vehicle safety
- Reduced road wear
- Improved vehicle efficiency
- Innovative Design

# PBS vs Regulations

Prescriptive Standards	Performance-Based Standards
<u>What the vehicle looks like</u>	<u>What the vehicle can do</u>
Governs <b>mass and dimensions</b>	Governs actual <b>on-road performance</b>
<b>Constrains productivity</b>	Allows <b>heavier and/or larger vehicles</b>
<b>Constrains innovation</b>	Promotes <b>innovation</b>



# PBS Tests: Infrastructure



**Infrastructure**

**Road Wear Analysis**

**Bridges**

Payload Efficiency  
Pavement Vertical Loading

Bridge Loading Formula (Reg 241)

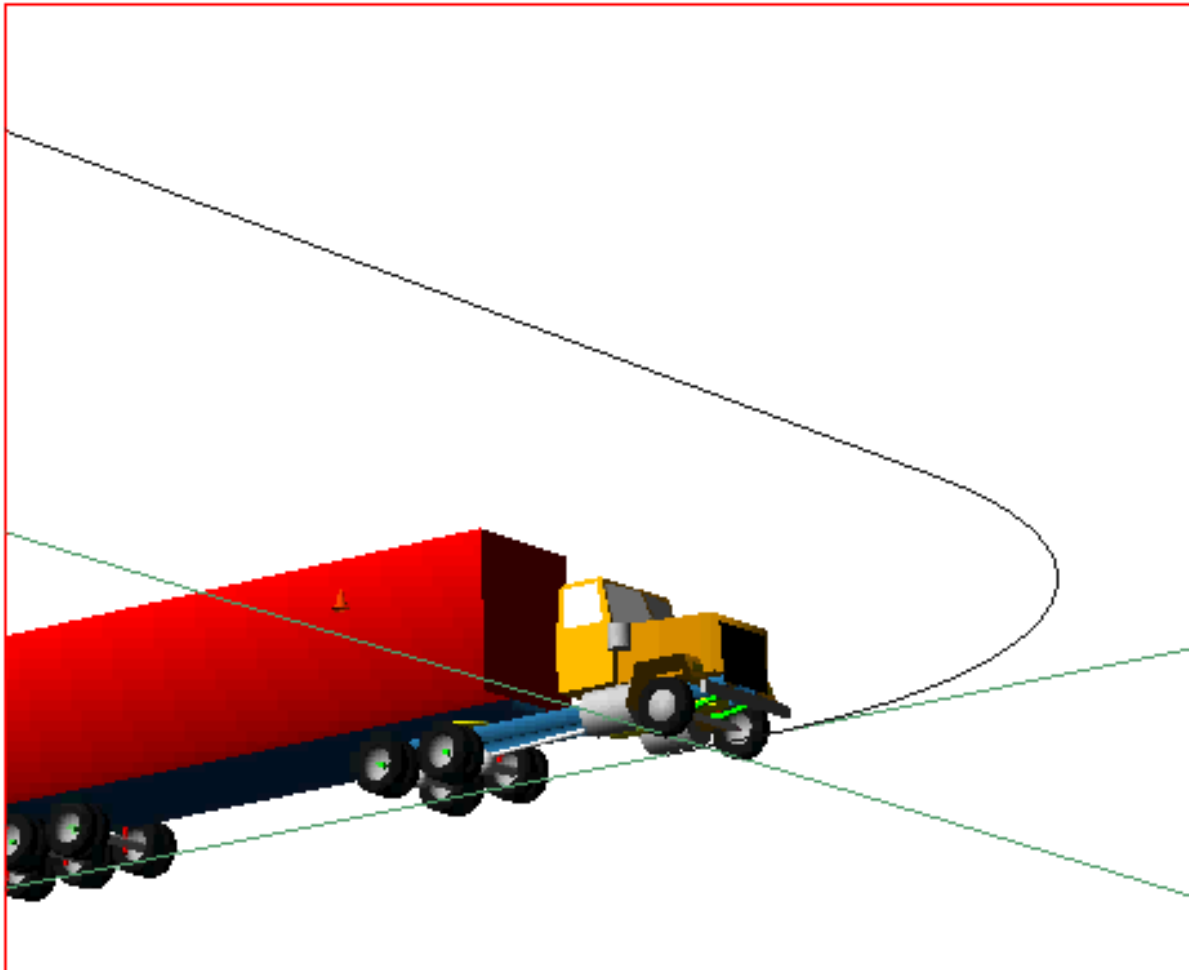
# Payload Efficiency Example

LEF/100 passengers				% change in road wear of 4-axle bi-articulated bus relative to:		
2-axle rigid bus	3-axle rigid bus	3-axle single articulated bus	4-axle bi-articulated bus	2-axle rigid bus	3-axle rigid bus	3-axle single articulated bus
4.61	4.47	8.03	4.23	-8%	-5%	-47%

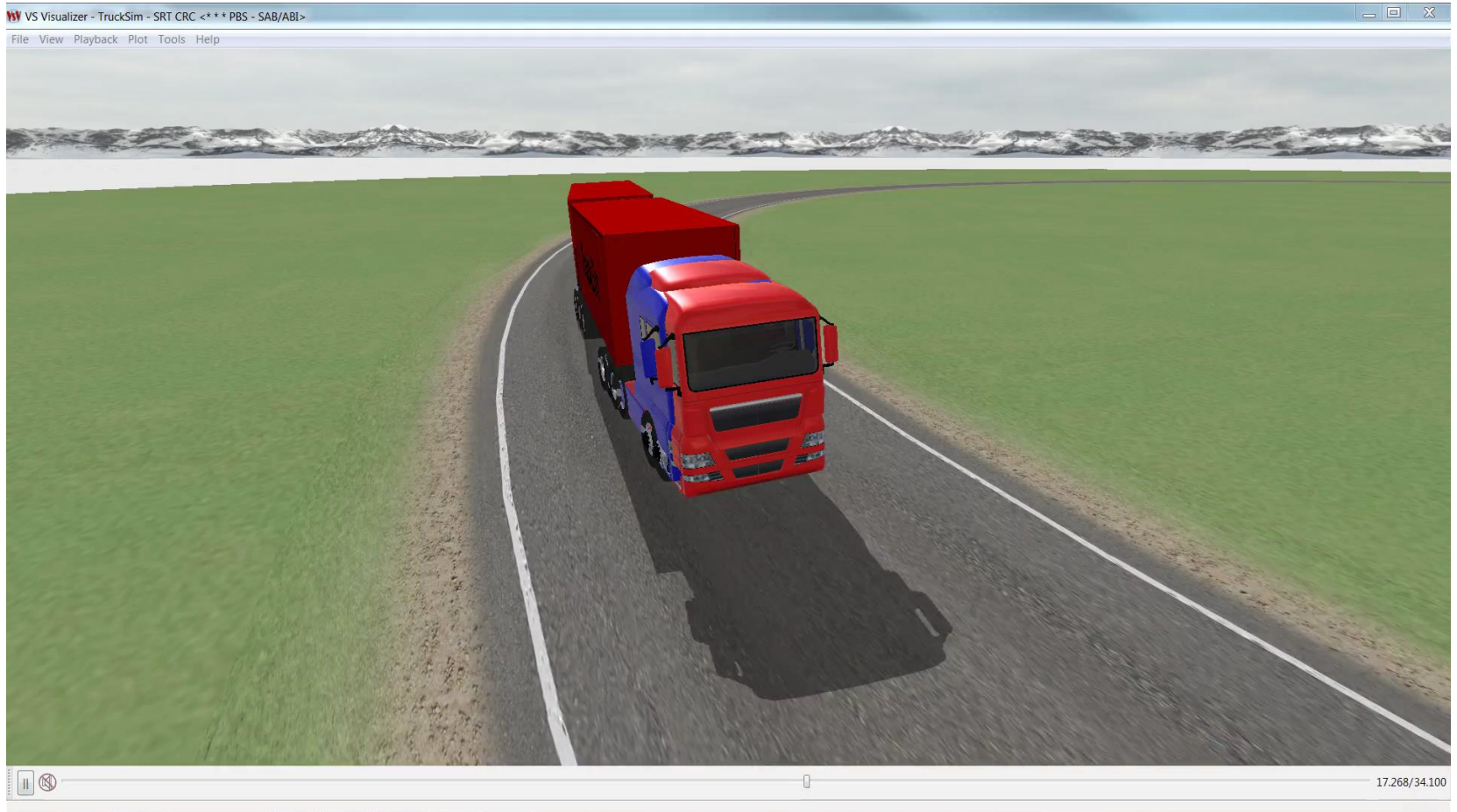
# PBS Tests: Safety

Manoeuvre/Test	Performance Standard
Low-speed 90° turn (5 km/h)	Low-speed swept path Tail swing Frontal swing Steer-tyre friction demand
High-speed lane-change (80 km/h)	Rearward amplification High-speed transient offtracking
Rollover	Static rollover threshold
High-speed pulse steer (80 km/h)	Yaw damping coefficient
High-speed on uneven road (90 km/h)	Tracking ability on a straight path
Various (driveability standards)	Startability Gradeability A Gradeability B Acceleration Capability

# Low-Speed Off-tracking

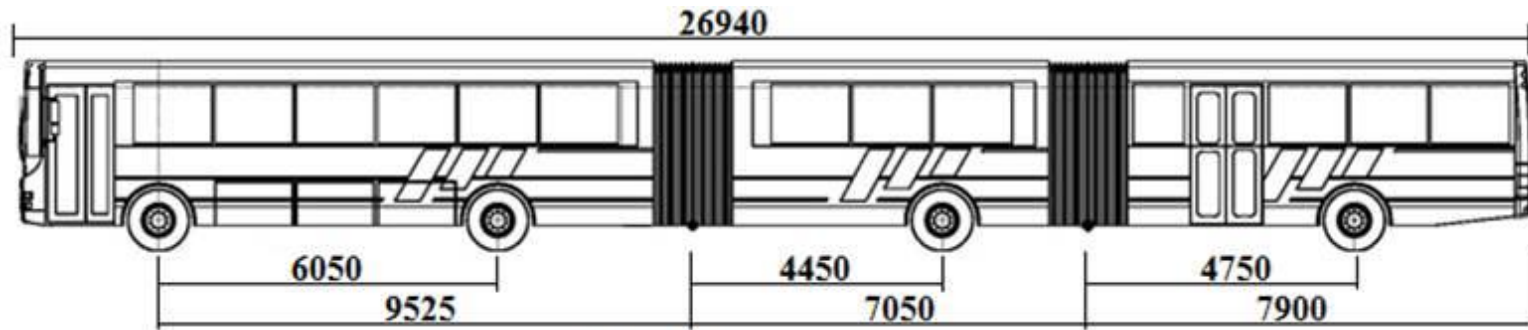


# Rollover: Legal vs PBS

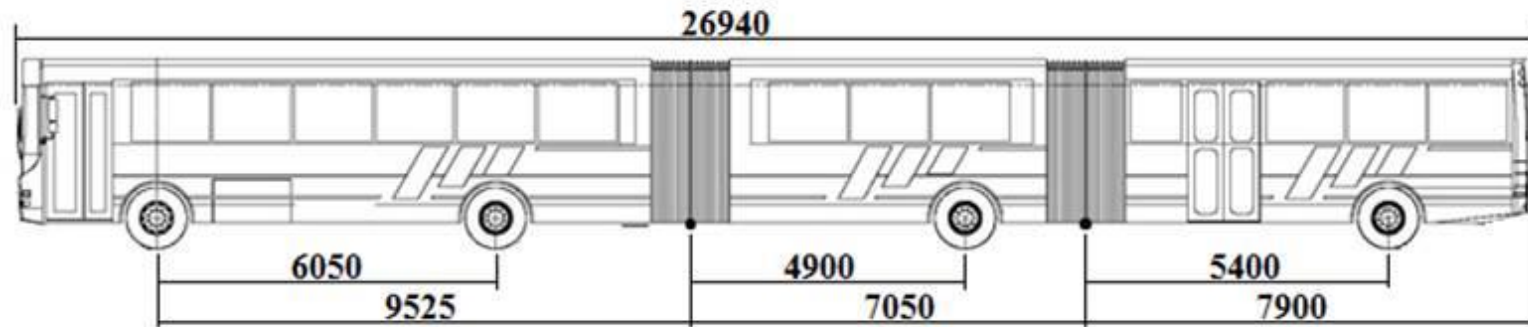




# PBS Bi-articulated Bus

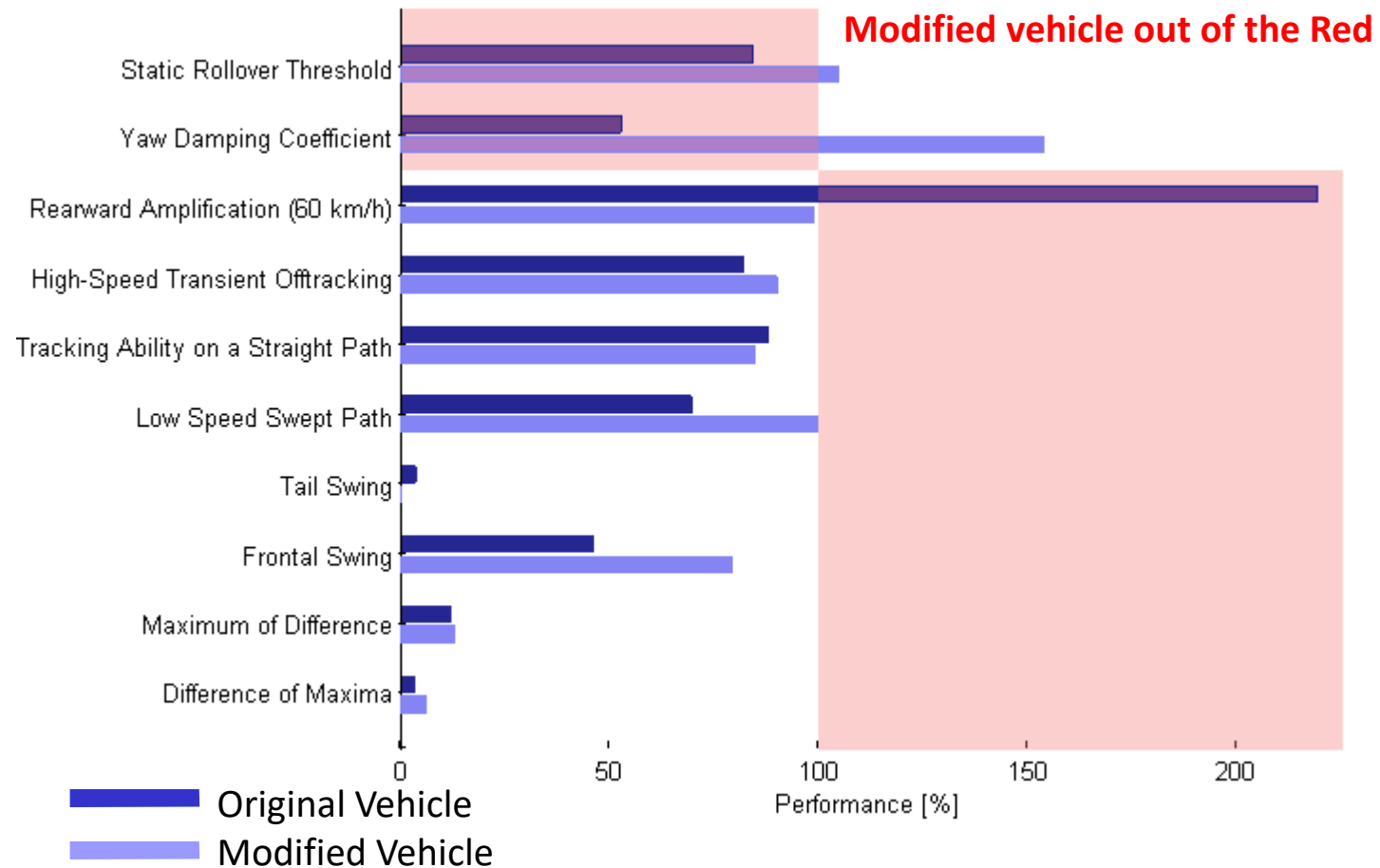


Original Vehicle



Modified Vehicle

# Improved Safety



# Potential Gains from PBS vehicles:

- Reduced Vehicle Trips, i.e.
  - Reduced congestion
  - Reduced safety exposure risk
- Improved safety performance
- Improved transport productivity
- Reduced road wear (per ton.km)
- Reduced emissions (per ton.km)
- Improved vehicle efficiency

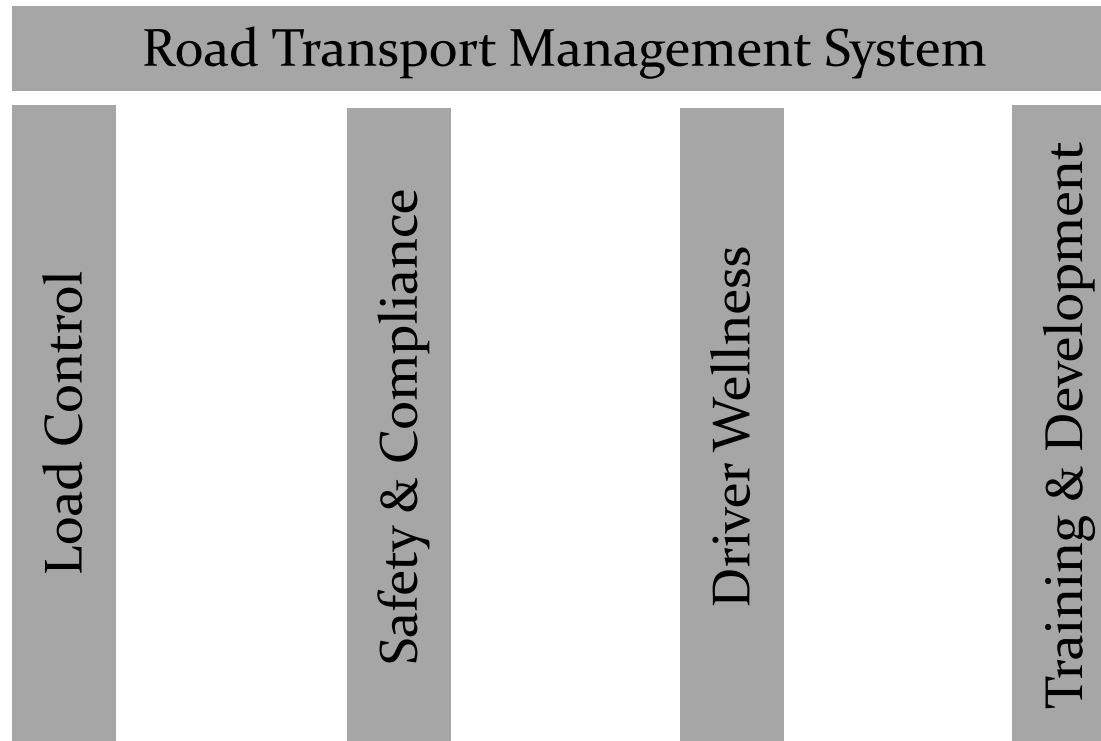
# Road Transport Management System

RTMS is a voluntary self-regulation scheme that encourages operators, consignors and consignees engaged in the transport and logistics industry, to implement a Road Transport Management System within their organisation that will:

- Preserve our road infrastructure
- Improve road safety
- Increase productivity



# Four pillars of RTMS:



# The 10 elements of the RTMS standard:

- Management of a Fleet Inventory system
- Monitoring and implementation of Passenger number control
- Promoting Road Safety through risk identification and communication
- Ensuring that all vehicles are Maintained and are Roadworthy
- Implementation of procedures which promote Vehicle & Passenger Safety
- Ensuring and preserving the Health & Wellness of the drivers
- Training & Development through scheduling and risk identification
- Maintaining documents & keeping records
- Regular Performance Evaluations
- Continual improvement of the company's efficiency & Road Safety record

# Management of Fleet Inventory

- ✓ Auditing of your fleet list can point out anomalies on your fleet list and even on your NATIS documents.
- ✓ The requirement of Vehicle Files in each bus can prevent conflict when vehicles are pulled off at:
  - Weighbridges
  - Random inspections for roadworthiness
  - Random inspections for permits
- ✓ Placing accident procedures to be followed and relevant documentation in the Vehicle File can reduce problems with insurance claims and hence save money.

# Monitoring of passenger numbers per bus

- ✓ RTMS forces the operator to check that the vehicle data plates are correct on each vehicle. This can prevent fines when crossing weighbridges.
- ✓ RTMS places the responsibility of controlling passenger numbers on the operator.
  - The driver is no longer solely responsible for passenger number control.
  - Operational staff are forced to be more involved with the control of passenger numbers on vehicles.
  - The operator has to proactively manage route schedules to cater for the demand as it changes.
  - Managing passenger numbers reduces wear and tear and eliminates the risk of accidents due to overloading.
  - Conducting censuses helps the bus operator to benchmark his market share against other modes of transport

# Maintenance of Roadworthy Vehicles

- ✓ The RTMS standard requires the operator to implement maintenance schedules and procedures which will ensure that the vehicles remain roadworthy at all times.

This requirement promotes the concept of preventative maintenance which has the spin-off that it will in the long run will reduce operating costs and improve the reliability of the fleet.

- ✓ The implementation of a history system on vehicle repairs will enable the operator to monitor expenses per vehicle in order that he may make informed decisions when applying parts or vehicle replacement strategies.

# Vehicle and Passenger (Load) Safety

- ✓ The practise of performing pre-trip inspections and having in journey fault reporting procedures can prevent breakdowns, reduce expensive failures and prevent unnecessary traffic fines.
- ✓ RTMS requires the operator to report and record all incidents and accidents. The operator can build up a database which can be used to analyse past incidents and accidents in order to determine if there are patterns which contributed towards the incidents and accidents. The operator can then introduce measures to reduce the number of accidents and incidents which saves down time, money and lives.

# Vehicle and Passenger (Load) Safety

✓ Monitoring driver behaviour (with satellite tracking) and taking corrective action through structured disciplinary process will definitely reduce:

- Speeding fines,
- Vehicle and tyre damage due to abuse,
- Accidents,

and improve your image with the public at large when it is seen that your drivers adhere to the rules of the road.

# Driver Wellness

- ✓ Following the guidelines of the RTMS will give you as an operator the assurance that your drivers are medically fit to perform their driving duties.
- ✓ Extending wellness programs beyond physical wellness to cater for financial, mental and spiritual wellness can change the attitude of your workforce which is highly beneficial for labour relations.
- ✓ Monitoring driving hours rigorously will reduce driver fatigue related accidents which can save money and lives

# Training and Education

- ✓ RTMS requires the operator to make sure that:
  - Training has been scheduled
  - There is a structured training plan
  - All training done is documented
  - The driver is properly assessed before he may drive alone
  - Has a valid PrDP

Putting procedures and checks in place in order to meet these requirements will prevent accidents and save operating costs as drivers will know how to use the vehicle correctly.

(Example: Intelligent braking systems)

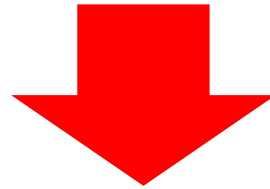
# Records and Documentation

- ✓ RTMS requires that all procedures and standards should be documented.

During the writing or reviewing of these procedures and standards the operator is bound to find shortcomings which if addressed, can improve the running of the business.

# Performance assessment

Regular performance assessment gives management the assurance that the procedures and standards put into place are followed correctly.



Continual improvement of the company's Efficiency & Road Safety record

# Summary

By implementing the RTMS in your organization, there is a potential to:

- ✓ Renew your perspective of what is happening within your organization
- ✓ Help you implement procedures and standards for all the critical aspects of transport management
- ✓ Enhance your image as a responsible operator with your stakeholders (Passenger Forums, Transport Authorities, Banks, etc.)
- ✓ Reduce expenditure
- ✓ Reduce accidents and save lives

Thank You!