Promoting Safety and Sustainability through the Road Transport Management System (RTMS) self-regulation scheme

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SA RTMS National Steering Committee Research Group Leader: Network Asset Management Systems
CSIR Built Environment
CONTENTS

- This presentation is about:
  - Safety and
  - Sustainability
Essentially the RTMS and PBS initiatives are about:

- Managing risk
- Promoting compliance
- Increasing productivity
Road Transport Efficiency & Safety

- High standard of infrastructure (capacity, road surface, road markings, road signs, stopping facilities, road reserve)
- Minimum incidents/crashes including breakdowns
- Compliance with traffic regulations
- Safety & security (effective law enforcement)
- Efficient emergency response
- Seamless cross-border transit
Reality Check
Reality Check
Reality Check
Reality Check
<table>
<thead>
<tr>
<th>Road condition</th>
<th>Average maintenance and repair cost (R/km)</th>
<th>Average percentage increase in the truck maintenance and repair cost</th>
<th>Average percentage increase in company logistics cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>R 0.96</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fair</td>
<td>R 1.24</td>
<td>30%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Bad</td>
<td>R 2.11</td>
<td>121%</td>
<td>10.4%</td>
</tr>
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</table>
# Brake & Tyre Watch Results

<table>
<thead>
<tr>
<th>Location</th>
<th>Inspected</th>
<th>Discontinued</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Deep</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Middelburg</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Centurion</td>
<td>41</td>
<td></td>
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<tr>
<td>Midway KZN</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Kroonstad</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Brackenfell, W. Cape</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Pietermaritzburg</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Port Elizabeth</td>
<td>15</td>
<td></td>
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<tr>
<td>Rustenburg</td>
<td>7</td>
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</tr>
<tr>
<td>Polokwane</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Midway KZN</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Bloemfontein</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Nelspruit/Komati</td>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL (41 events) 738**

41 B&TW events from Feb. 2006 to date
## Brake & Tyre Watch Results

<table>
<thead>
<tr>
<th>Location</th>
<th>Inspected</th>
<th>Discontinued</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Deep</td>
<td>24</td>
<td>21</td>
<td>88%</td>
</tr>
<tr>
<td>Middelburg</td>
<td>35</td>
<td>24</td>
<td>69%</td>
</tr>
<tr>
<td>Centurion</td>
<td>41</td>
<td>17</td>
<td>42%</td>
</tr>
<tr>
<td>Midway KZN</td>
<td>26</td>
<td>10</td>
<td>38%</td>
</tr>
<tr>
<td>Kroonstad</td>
<td>8</td>
<td>7</td>
<td>92%</td>
</tr>
<tr>
<td>Brackenfell, W. Cape</td>
<td>25</td>
<td>25</td>
<td>100%</td>
</tr>
<tr>
<td>Pietermaritzburg</td>
<td>12</td>
<td>11</td>
<td>92%</td>
</tr>
<tr>
<td>Port Elizabeth</td>
<td>15</td>
<td>6</td>
<td>40%</td>
</tr>
<tr>
<td>Rustenburg</td>
<td>7</td>
<td>5</td>
<td>72%</td>
</tr>
<tr>
<td>Polokwane</td>
<td>11</td>
<td>10</td>
<td>91%</td>
</tr>
<tr>
<td>Midway KZN</td>
<td>24</td>
<td>20</td>
<td>83%</td>
</tr>
<tr>
<td>Bloemfontein</td>
<td>24</td>
<td>20</td>
<td>83%</td>
</tr>
<tr>
<td>Nelspruit/Komati</td>
<td>13</td>
<td>12</td>
<td>92%</td>
</tr>
<tr>
<td><strong>TOTAL (41 events)</strong></td>
<td><strong>738</strong></td>
<td><strong>506</strong></td>
<td><strong>69%</strong></td>
</tr>
</tbody>
</table>

41 B&TW events from Feb. 2006 to date
Heavy Vehicle Fatal Crash Rates

Fatal truck crash per 100 million vehicle kilometres travelled

Source: OECD report, Moving Freight with Better Trucks, 2010
Road Freight Challenges
The Reality: A Culture of Non-compliance

• Inputs
  – Overloading
  – Poor vehicle fitness (servicing & maintenance)
  – Poor driver fitness (fatigue, health, training)
  – Reckless driver behaviour
  – Border post delays
  – Bribery & corruption – impact on compliant and non-compliant operators
  – Inadequate periodic maintenance (roads)

• Outputs
  – Poor road safety
  – High cost of road transport/logistics
  – Deterioration of infrastructure
  – High levels of emissions
## Impacts of Non-compliance

<table>
<thead>
<tr>
<th>Action</th>
<th>Primary Negative Effect</th>
<th>Secondary Negative Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy vehicle overloading</td>
<td>Accelerated road wear, downtime, fines</td>
<td>Increase in fuel consumption, safety risk, vehicle maintenance costs &amp; GHGs</td>
</tr>
<tr>
<td>Lack of vehicle maintenance &amp; repair</td>
<td>Increased safety risk</td>
<td>Increase in logistics costs (long term)</td>
</tr>
<tr>
<td>Inadequately trained drivers</td>
<td>Increased safety risk and fuel consumption</td>
<td>Increase in GHGs</td>
</tr>
<tr>
<td>Poor driver health, driver fatigue</td>
<td>Increased safety risk</td>
<td>Increase in fuel consumption &amp; GHGs, higher driver turnover, absenteeism</td>
</tr>
<tr>
<td>Speeding</td>
<td>Increased safety risk, fines and delays if apprehended</td>
<td>Increase in fuel consumption &amp; GHGs</td>
</tr>
<tr>
<td>Underloading</td>
<td>Increase in logistics cost &amp; vehicle trips</td>
<td>Increase in fuel consumption, congestion &amp; GHGs</td>
</tr>
<tr>
<td>Sub-optimal vehicle design</td>
<td>Increased safety risk</td>
<td>Increase in congestion, logistics cost &amp; GHGs</td>
</tr>
</tbody>
</table>
Growth of the RTMS in SA

Over 260 fleets representing over 16 000 trucks & buses (In 2007 their were 74 certified vehicles)

Four bus operators:
- Buscor 420 buses
- Intercap 160 coaches
- GABS 1100 buses
- Intestate 237 buses (Bloem)

24 abnormal load operators:
- 258 vehicles
- Plant hire, construction, engineering, mobile cranes
- 2 commercial A/L operators (108 vehicles)
OVERLOAD CONTROL
National Overload Control Strategy
Implemented by National, Provincial and Local Authorities

Infrastructure & Equipment
- Main routes (major facilities)
- Alternative routes (minor facilities/screening)
- Monitoring (HS-WIM)
- Alternative weighing equipment
- Private weighbridges

Self-regulation
- Road Transport Management System (RTMS)
- Performance-Based Standards (PBS)

Legislation
- Consignors/Consignees
- 5% Tolerance
- User charges
- Habitual Overloaders
- Public Prosecutors
- Alternative weighing equipment
- AARTO

Information sharing & Public Awareness
- Overload website
- Overload information booklet

Operations
- Human Resources
- PPP
- Training
- Guideline document for law enforcement

Co-operation
- Provinces
- Local authorities
- Department of Justice
- Private sector
SOUTH AFRICAN NATIONAL STANDARD

Road transport management systems
Part 1: Operator requirements — Goods
Practical requirements of the RTMS

RTMS Criteria
(SANS 1395-1:2014)

(Clauses 1 & 2) Fleet/Loading Control
- Fleet Inventory
- Control of loading
- Prevent Overloads
- Optimise Payload

(Clauses 3, 4, 5) Safety/Compliance
Vehicle Maintenance
Basic Roadworthiness
Minimising breakdowns
Speed Management
Accident Analysis
Traffic violations
Risk Management

(Clauses 6) Driver Wellness
Medical Fitness
Chronic illness
Management
Fatigue Management
(Shift / Driving hours)
Wellness Initiatives
(Nutrition etc.)

(Clauses 7 & 8) Support
Providing skills development to ensure drivers obtain and retain competency to be safe, compliant and a minimal risk on public roads

(Clauses 9-13) Documents + Records + Monitoring + Corrective Actions + Internal Audit + Management Review
Vehicle Maintenance

<table>
<thead>
<tr>
<th>SERVICE KM BOOKED</th>
<th>SERVICE DATE</th>
<th>SERVICE KM DONE</th>
<th>JOBCARD NUMBER</th>
<th>SERVICE COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>30,000</td>
<td>07/3/14</td>
<td>58502</td>
<td>7848</td>
<td>8,689.61</td>
</tr>
<tr>
<td>90,000</td>
<td>05/5/14</td>
<td>58502</td>
<td>7848</td>
<td>8,689.67</td>
</tr>
<tr>
<td>120,000</td>
<td>25/4/14</td>
<td>54460</td>
<td>8708</td>
<td>-</td>
</tr>
<tr>
<td>150,000</td>
<td>17/10/14</td>
<td>119918</td>
<td></td>
<td>8769.55</td>
</tr>
<tr>
<td>180,000</td>
<td>31/12/14</td>
<td>149195</td>
<td></td>
<td>9234.53</td>
</tr>
</tbody>
</table>
Importance of Pre-trip Inspections

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>12. Foot Brake</strong></td>
<td><strong>28. V Belt</strong></td>
<td></td>
</tr>
<tr>
<td>(Working)</td>
<td>(Working)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>13. Handbrake</strong></td>
<td><strong>29. Tip Deck</strong></td>
<td></td>
</tr>
<tr>
<td>(Operational)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>14. Clutch</strong></td>
<td><strong>30. Gears</strong></td>
<td></td>
</tr>
<tr>
<td>(Operational)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>15. Hooter</strong></td>
<td><strong>31. Fire Extinguisher</strong></td>
<td></td>
</tr>
<tr>
<td>(Working)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>16. Emergency Kit</strong></td>
<td><strong>32. Machine Condition</strong></td>
<td></td>
</tr>
<tr>
<td>(Available &amp; Condition)</td>
<td>Before Shift :</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dirty</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Damaged</td>
<td></td>
</tr>
<tr>
<td></td>
<td>After Shift :</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Damaged</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Supervisor Signature</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Critical** - if found sub standard, vehicle may not be operated!
Key Elements in Road Freight Transport

- Road infrastructure: roads, bridges, roadside furniture, signs, road markings, eToll gantries
- Vehicles: design, maintenance & operation
- Drivers: skill, health, fatigue
Strategic thrusts & programmes

Road Freight Strategy

1. Strategic thrusts
   - Integrated transport mechanisms
   - Road infrastructure management & funding
   - Overload control management system
   - Self-regulation & road safety

2. Strategic programmes
   - Integrated Transport Commission
   - Alignment of Transnet’s mandate
   - Rail linkages with other modes /IMT
   - Minimum targets for rail at ports
   - Efficient border posts
   - Change authority over roads
   - Establish road maintenance fund
   - Introduce heavy vehicle user-pay principles
   - Overload control inspectorate
   - Optimisation of existing weighbridges
   - Credible penalties
   - Infringement system and training
   - Weigh-in-motion technology
   - Overload control database
   - Resolve non-physical barriers
   - Promotion of self-regulation amongst operators
   - Improve road safety
   - Optimise transport of dangerous goods and abnormal goods

Operational issues: Driver and vehicle fitness; system and systems integration; performance
This plaque was unveiled by:
The Honourable Ms D Peters
Minister of Transport
15 October 2014

To mark the launch of the Buscor Bi-Articulated Bustrain
which is the 1st of its kind in the world,
the MAN bi-articulated Bustrain is built on a front engine
and will operate on all classes of the road.

This concept was designed by
Buscor's Research and Development Department
and was built by MAN BUS & TRUCK SA.
RTMS: Overloading trend in forestry
Case Study: City of Cape Town

Government Fleet Case Study
Electricity Fleet Management and Maintenance Services

Willem Janse Van Rensburg

July 2016

Making progress possible. Together.
Fleet management was generally viewed as a fleet maintenance service, which led to the various activities being dealt with on a decentralised somewhat fragmented basis.

During the financial year 05 / 06 the organisational structure of fleet services was reviewed and consequently aligned with a proposed business model which provided functionally aligned vehicles to the operations in terms of an internal price recovery agreement.

The Electricity Services fleet comprised a fleet of 900 vehicles ranging from off road utility vehicles, sedans, ldv's and panel vans to light, medium and heavy trucks as well as a variety of truck mounted aerial platforms.

The fleet stock replacement cycle at the time was 33 years which was far above the industry norms for vehicle replacement. Current average Fleet stock replacement cycle 8.5 years.

Functional alignment - 40% > 95%

Fleet availability – 65% > 92.7%
## Electricity Fleet Overview 2005-2016

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>33 Years</td>
<td>8-15 Years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-&gt; Above Industry Standards</td>
<td>-&gt; Based on asset type and condition assessment</td>
<td></td>
</tr>
<tr>
<td>Functional alignment</td>
<td>40%</td>
<td>85%</td>
<td>Implementation of EAM</td>
</tr>
<tr>
<td></td>
<td>-&gt; High misalignment between vehicle specifications and operational requirements</td>
<td>-&gt; Vehicles purchased as per specific operational needs</td>
<td>Right-sizing of fleet vehicles</td>
</tr>
<tr>
<td>Fleet Availability</td>
<td>65%</td>
<td>92%</td>
<td>Daily management system implemented</td>
</tr>
<tr>
<td></td>
<td>-&gt; Work Orders open for months</td>
<td>-&gt; Work Orders closed within 14 days</td>
<td></td>
</tr>
<tr>
<td>Service Schedule Attainment</td>
<td>47%</td>
<td>98%</td>
<td>Contractor KPI’s instituted</td>
</tr>
<tr>
<td></td>
<td>-&gt; Vehicles not maintained on time</td>
<td>-&gt; Vehicles serviced as per monthly plan</td>
<td>Effective Communication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-&gt; 100% Statutory compliance</td>
<td></td>
</tr>
</tbody>
</table>
Benefits: Efficiency Improvements

- Fuel Consumption Improved from 17L/100km to 13L/100km
- Carbon footprint improved by 24%
- Cost savings on fuel = R5.7 Million
- Cost savings on repairs and maintenance = R4.2 Million (2016FY)
Benefits: Reduction in Traffic Violations and Accidents

**Total Traffic Violations: Electricity Global Statistics**

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan'15</th>
<th>Feb'15</th>
<th>Mar'15</th>
<th>Apr'15</th>
<th>May'15</th>
<th>Jun'15</th>
<th>Jul'15</th>
<th>Aug'15</th>
<th>Sep'15</th>
<th>Oct'15</th>
<th>Nov'15</th>
<th>Dec'15</th>
<th>Jan'16</th>
<th>Feb'16</th>
<th>Mar'16</th>
<th>Apr'16</th>
<th>May'16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violations</td>
<td>27</td>
<td>25</td>
<td>42</td>
<td>33</td>
<td>28</td>
<td>27</td>
<td>13</td>
<td>26</td>
<td>20</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

**Fleet Incident Rate per Million Kilometres**

- **Accident Rate**: 27%
- **Benchmark (7.5%)**: 15%

- Traffic violations measured and monitored monthly
- Monthly reporting to management
- Driver training according to requirements

Accidents and incidents measured and monitored monthly
- Monthly reporting to management
- Driver training according to requirements
City of Cape Town: Reduction in Incidents

Fleet Incident Rate Per Million Kilometers

08/09 09/10 10/11 11/12 12/13 13/14 14/15 15/16

Incident Rate

Financial Year

Benchmark (7.5%)
KPI Improvements

Maintenance compliance

Proactive Maintenance Compliance

Feb 2008 - Oct 2012

Committed to service excellence and protection of the environment
Case Study: Dawn Logistics

Embracing the RTMS challenge

If ever you're looking for an example of the vast improvements that can accrue in all areas of a transport company's operations via the implementation of the Road Transport Management System (RTMS), look no further than Dawn Logistics writes Patrick O'Leary.
# POSITIVE RESULTS

<table>
<thead>
<tr>
<th>YEAR</th>
<th>FINES</th>
<th>CRASHES</th>
<th>DRIVER ERROR</th>
<th>BREAKDOWNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>218</td>
<td>37</td>
<td>19</td>
<td>57</td>
</tr>
<tr>
<td>2014</td>
<td>232</td>
<td>26</td>
<td>11</td>
<td>46</td>
</tr>
<tr>
<td>2015</td>
<td>56</td>
<td>17</td>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>2016</td>
<td>48</td>
<td>26</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>2017</td>
<td>46</td>
<td>20</td>
<td>5</td>
<td>22</td>
</tr>
</tbody>
</table>

![Graph showing the trend of crashes, fines, breakdowns, and fleet over the years 2013 to 2017. The graph indicates a decrease in crashes, fines, and breakdowns over the years, with the fleet showing a consistent trend.](image-url)
Driver behaviour:
Driver speeding is monitored on a daily basis through our tracking system and all events are addressed with drivers daily on debriefing
• 2013 = Unknown
• 2014 = 60 127 (201 fleet = 299 speeding events each truck per year)
• 2015 = 8 689 (252 fleet = 34 speeding events each truck per year)
• 2016 = 4 722 (257 fleet = 18 speeding events each truck per year)
• 2017 = 4 925 (257 Fleet = 19 speeding events each truck per year)

Driver awareness and safety
Has increased due to training, educating, posters and truck information manuals
Driver motivation has increased due to Driver of the month and driver of the year awards. Selected by tracking system which monitors drivers behaviour and gives the drivers a monthly score.
**POSITIVE RESULTS**

**Driver wellness**
- Fatigue managed eliminates risk
- Chronic conditions managed eliminates risk
- Alcohol testing eliminates risk

**Fuel consumption:**
Consistently improved, we monitor fuel on a daily basis and we are running above industry average.

Since implementation (2013) our fuel consumption of km per litre has increased by 23% (2017)

This is influenced by good maintenance processes and driver behaviour – Speeding, defensive driving, harsh braking, driving economically, Which RTMS promotes in their accreditation.
ZZ2 (Tomato producers): Reduction in Insurance Claims

Reduction in Insurance Claims

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount in rands</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>R 1 750 000</td>
</tr>
<tr>
<td>2013</td>
<td>R 750 000</td>
</tr>
<tr>
<td>2014</td>
<td>R 250 000</td>
</tr>
<tr>
<td>2015</td>
<td>R 250 000</td>
</tr>
</tbody>
</table>
Vehicle Delivery Services: Reduction in Speed violations

System Speed Violations per Month

- Cape Town
- Cross Border
- KZN
- GM PE
- Gauteng Local
- MBASA
- VW PE

Linear (KZN)
Linear (Gauteng Local)
Linear (MBASA)
RTMS benefits: Crash reductions

- Barloworld Logistics: 66% reduction in the number of crashes in 2012 (owner driver fleet);
- Vehicle Delivery Services: 42% reduction in serious crashes from 2011 to 2012;
- Timber Logistics Services: 50% reduction in crashes and incidents from 2009 to 2012;
- The City of Cape Town, Electricity Support Services: 44% reduction in the number of crashes;
- Unitrans Amatikulu: cost of crashes reduced from 5.0% of revenue to 1.3% of revenue (reduction in the frequency and severity of crashes)
RTMS qualitative benefits

- Reduced turnover of drivers due to HIV-related issues;
- Improved standard of living of drivers;
- Improvement in driver wellness, resulting in a consequent decrease in absenteeism;
- Reduction in breakdowns and drivers reporting breakdowns;
- Improved fleet utilisation (reduced downtime);
- Improved driver behaviour;
- More control and confidence in the company;
- Reassurance that drivers are medically fit to drive a heavy vehicle; and
- Improved motivation of employees
Effect of RTMS on compliance

RTMS

Law Enforcement

Compliant

Non-Compliant

Heavy vehicles > 25 tons (approx. 150 - 200 000)

RTMS-certified vehicles (approx. 17 000)