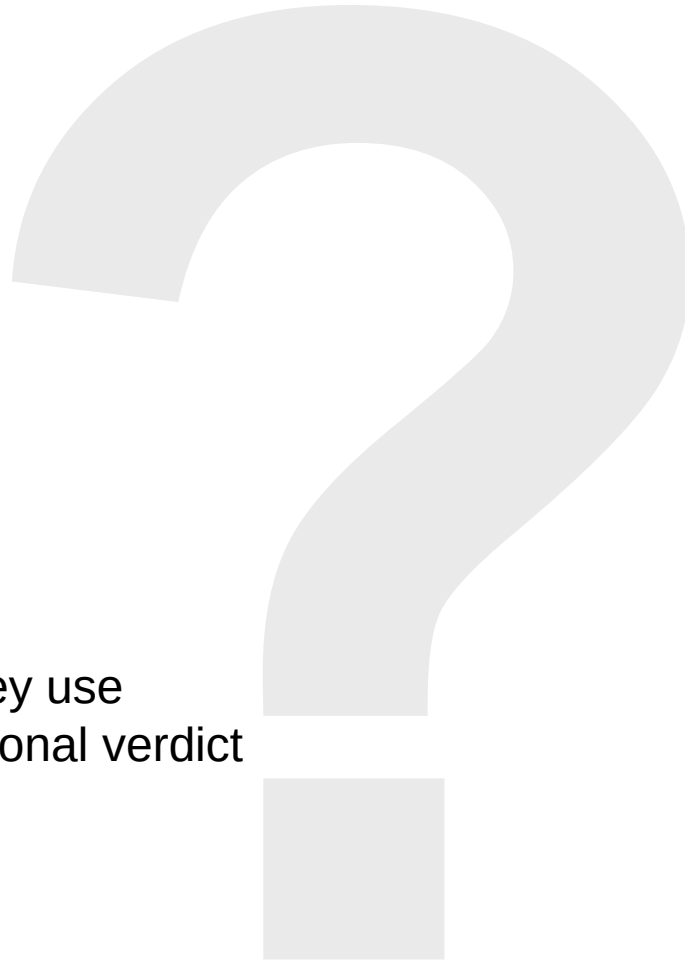




Performance based standard (PBS) vehicles - What is the jury's verdict?

Russell Morkel

4 November 2009



1. What is PBS
2. Who is the jury
3. What criteria will they use
4. What is their provisional verdict

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Phenomenally Brilliant Solution



To what problems?

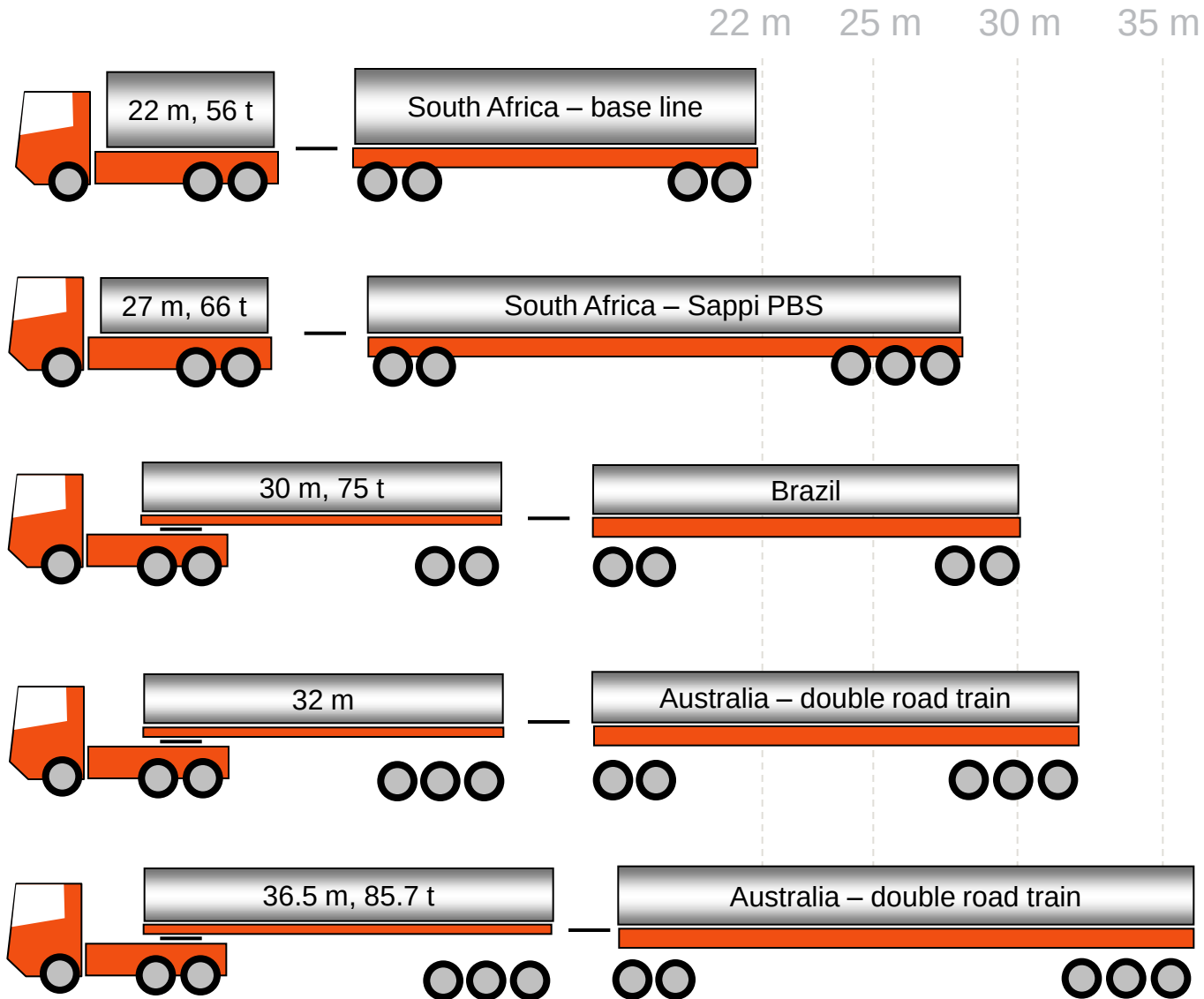
- Overloading
- Unsafe heavy vehicles
- Poorly trained drivers
- Poorly maintained trucks
- Traffic congestion
- Vehicle emissions
- Declining productivity
- Escalating costs

Performance Based Standards (the difference)



Regulation/criteria	Prescriptive	Performance
Dimensions	22 m long, 2.6 m wide, 4.3 m high	Pushing the limits
Axle loads	Steering, 9, 18, 24 tonnes	Steering, 9, 18, 24 tonnes
Bridge formula	$(2,100 \times L) + 18,000$	$(2,100 \times L) + 18,000$
Gross combination mass	56 tonnes (+2%)	Pushing the limits
Safety performance	Limited	1. Startability 2. Gradeability 3. Acceleration ability 4. Overtaking provision 5. Tracking ability on a straight path 6. Ride quality 7. Low speed swept path 8. Frontal swing 9. Tail swing 10. Steer-tyre friction demand 11. Static rollover threshold 12. Rearward amplification 13. High speed transient offtracking 14. Yaw damping coefficient 15. Handling quality 16. Directional stability under braking

Pushing the limits (length and GCM/payload)



‘PBS’ examples



27 m, 46 tonne, South Africa, 2007



30 m, 50 tonne, Brazil, 2005



36.5 m, 50 tonne, Australia, 2002

Proposed PBS rules

● Technology

- Active distance control system
- Driver fatigue warning device
- ABS and EBS braking systems
- Side marker lights

● Control

- RTMS accreditation
- Satellite tracking (with DoT/RTI access)
- No tolerance for overloading
- Incident and accident reporting

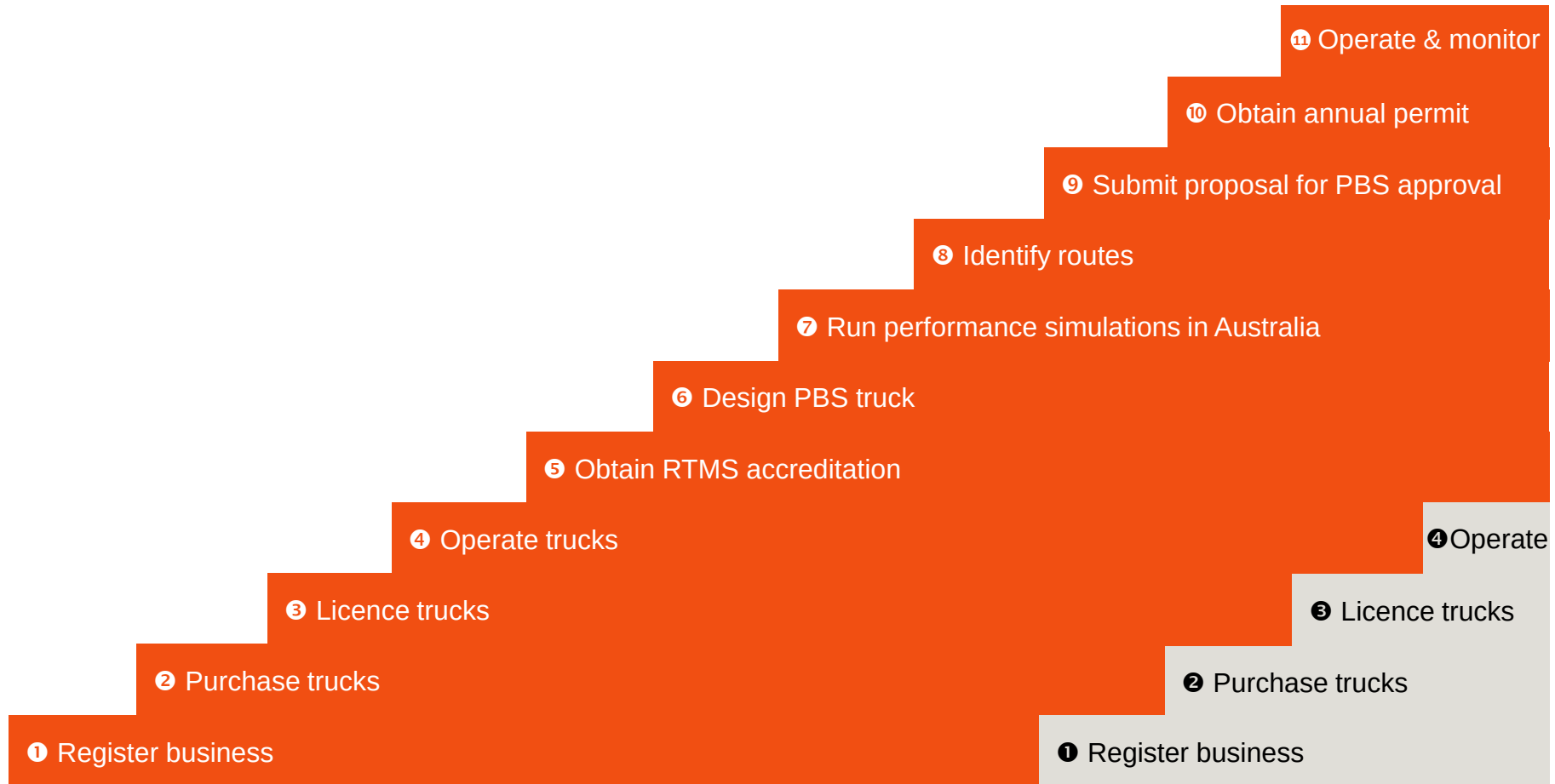
● Drivers

- Dangerous goods qualified drivers

Number of steps to operate



PBS *versus* conventional fleet



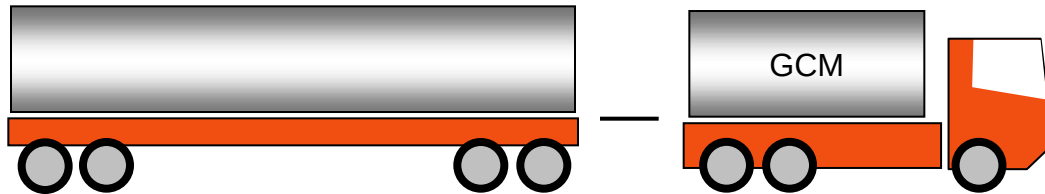
The importance of payload



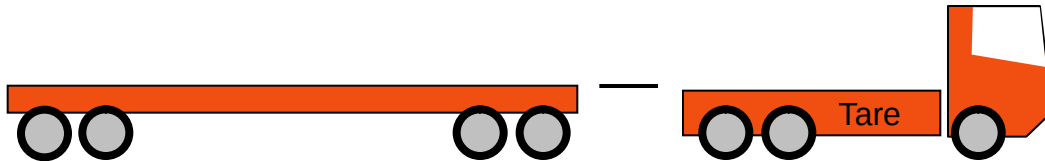
Sensitivity of a 10% increase for each input variable in a longhaul transport costing model

Input variable	Base figure	Variance	Sensitivity
Purchase price	R1,870,000	+2.54%	Low
Interest rate	11%	+0.41%	Low
Lead distance	120 km	+8.00%	High
Payload	39 tonnes	- 9.96%	High
Tyre life	80,000 km	- 1.77%	Low
Tyre cost	R4,300	+0.64%	Low
Fuel cost	R7.30/l	+3.50%	Medium
Fuel consumption	56l/100km	+3.46%	Medium
Repair and maintenance	R1.30/km	+1.22%	Low
Driver	R500/day	+2.13%	Low
Average speed	54 km/h	-2.89%	Low
Terminal times	60 minutes	+0.85%	Low

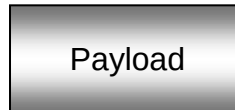
PBS and payload



-



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Conventional

PBS

56 t (+2%)

70 t

16 t

20 t

40 t

50 t

The jury



Members

- Growers (processors)
- Road hauliers
- Transport authorities (DoT and RTI)
- Rail operators (public and private)
- Public (road users and environmentalists)
- Politicians

Possible decision-making criteria

- Cost savings
- Improved or reduced competitiveness (road or rail operator)
- Self-regulation (RTMS underpins PBS)
- Less road damage (reduced axle loads)
- Less traffic (less trucks)
- Improved or reduced safety levels (safer truck *versus* perceived danger)
- Less emissions

Demonstration project results

Measure	Improvement ¹
Payload (tonnes)	⬆ 19.3%
Payload efficiency factor (Payload/GCM x 100)	69.5% ➡ 70.5%
Tonnes/truck/month	⬆ 19.3%
Fuel consumption (l/tonne)	⬇ 12.7%
Co ₂ emissions ²	⬇ 1,280 t/annum
Number of trucks	⬇ 17%
Pavement damage	⬇ 2 – 23%
Costs	⬇ 12.5%

¹ Conventional fleet compared to two PBS demonstration units, ² Based on 700,000t/annum contract

A jury member speaks



Railways Africa, August 2009

- A representative of the KZN DoT claims he has been promised that these rigs would not compete with rail. “Rubbish” says South Africa’s RailRoad Association (RRA)
- “The claim that there will be fewer trucks on the road,” the RRA points out, “has proved to be a fallacy in every country where the assertion has been made.”
- “This is a disaster and just the tip of the iceberg. It appears that the KZN Department of Transport can take decisions that fly in the face of national transport policy. They must not get away with this.”
- But they will – and are. Indeed, what point is there in government saying it is promoting rail if “performance-based initiatives” (and like-minded clichéd claptrap) are allowed to get away with it?

The provisional verdict



Jury member	Decision criteria	Verdict
Grower	Cost, safety, road damage, congestion, environment	
Authorities	Safety, self-regulation, road damage, congestion, environment	
Road haulier	Competitive advantage, cost, safety	
Rail operator	Competition	
Public	Safety, environment, road damage, congestion, cost	
Politicians	Public opinion, policy alignment, competitiveness	

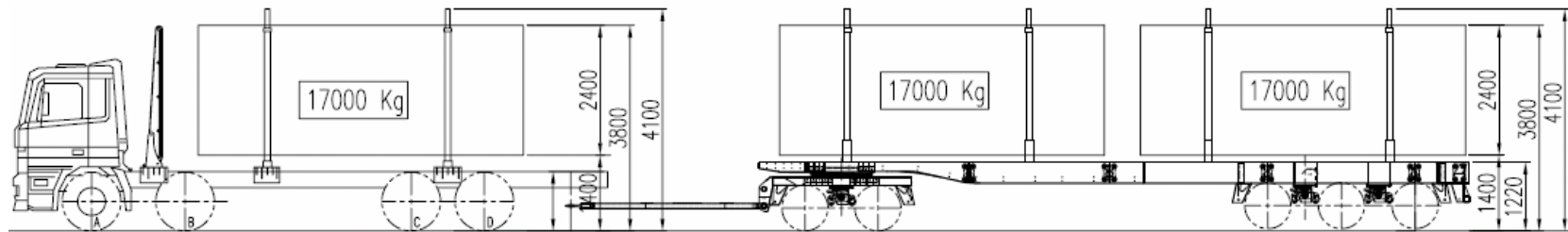
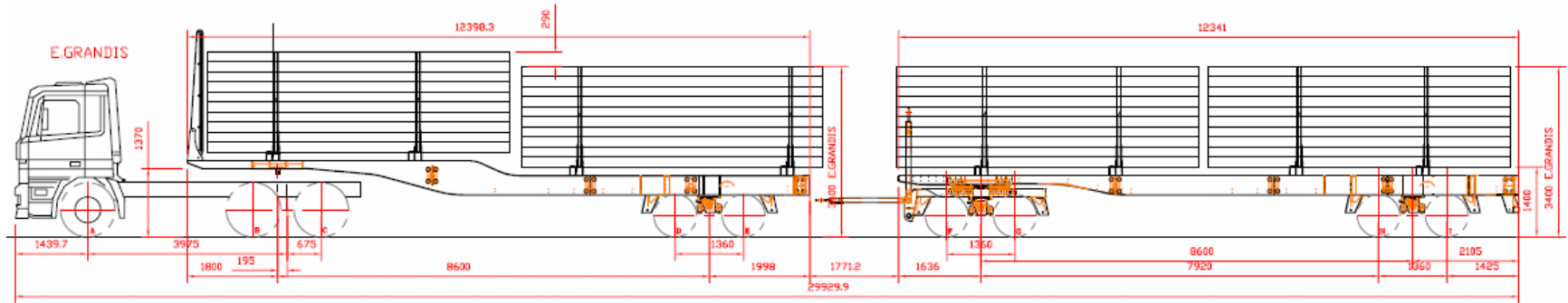
Current status of PBS in South Africa



Expanded demonstration project

- Initial demonstration project successfully completed
 - Operating for two years
 - Monitoring report on two PBS vehicles operating in the forestry industry: November 2007 – July 2008 (CSIR, February 2009)
 - Two similar rigid-drawbar designs (24 m and 27 m) hauling pine
- Expanded demonstration project launched
 - Thirty additional permits made available (15 for Sappi and 15 for Mondi)
 - Test new designs, commodities and routes
 - Sappi keeping original L2 design and phasing in vehicles by year-end
 - 27 m/46 tonne payload 6x4 rigid truck/full trailer configuration
 - Mondi have had two new designs simulated and PBS L2 approved
 - 29.93 m/50 tonne payload truck-tractor/semi-trailer/full trailer configuration
 - 26.83 m/50 tonne payload 8x4 rigid truck/full trailer configuration
 - These will be commissioned next year subject to PBS Review Panel approval

New Mondi PBS simulated designs



Phenomenally Brilliant Solution



*The future of PBS will ultimately be determined by
public perception and **political will***

You are the jury

FORWARD - LOOKING STATEMENTS

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