



# Performance Based Standards (PBS)

## A window of opportunity

IRTEENZ 2006

New Zealand 15-17 Aug 2006

Les Bruzsa (National Transport Commission)

Technical Officer of PBS Interim Review Panel

Queensland Transport – Principal engineer



Queensland Government  
Queensland Transport

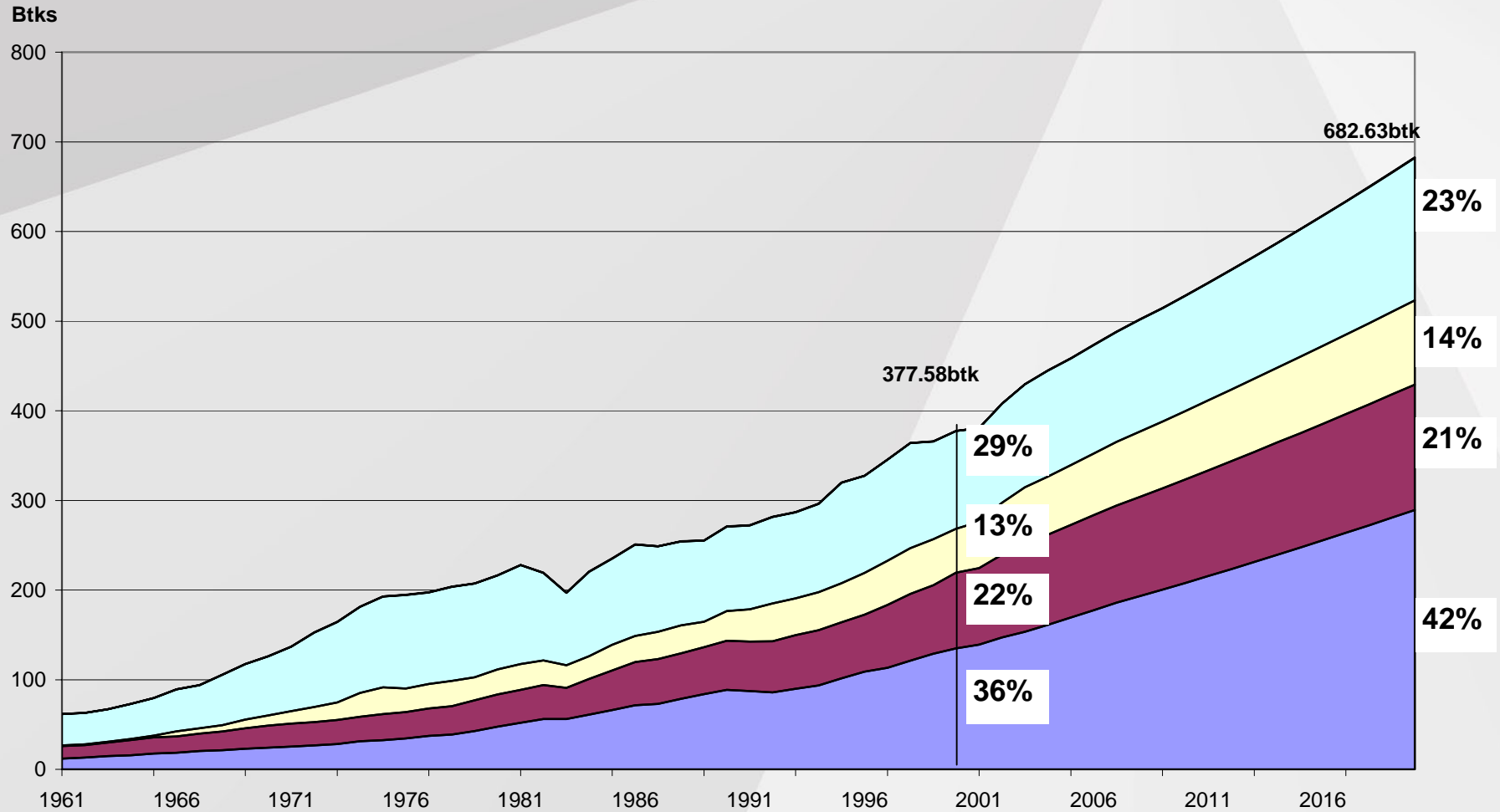


# Why do we need PBS (SMART)?



National Transport Commission

Modal Split 1960-61 to 2119-20: of the Total (bulk plus non-bulk) Domestic Freight Task



# COAG decision

## *Performance Based Standards:*

- identified as a key **productivity** reform
- potential to **replace** prescriptive rule-making
- continuous productivity gains and technological improvement, whilst meeting reasonable safety, road asset protection and environmental standards
- requirement for **binding and effective national decision-making processes**



# PBS: A major COAG reform

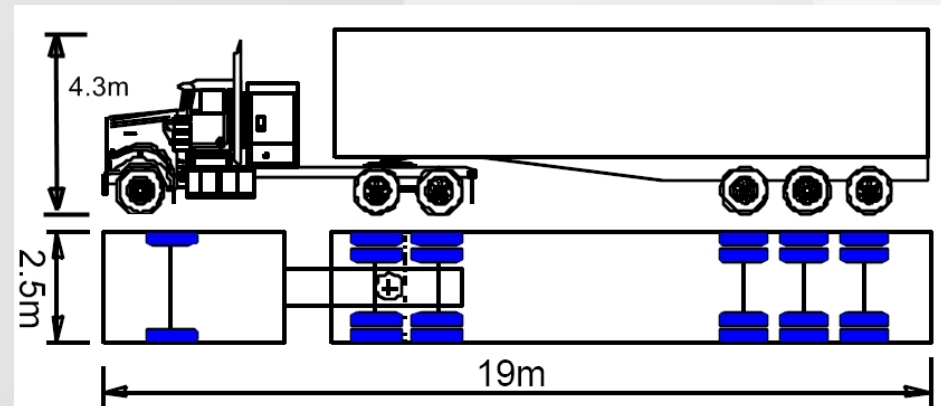


National Transport Commission

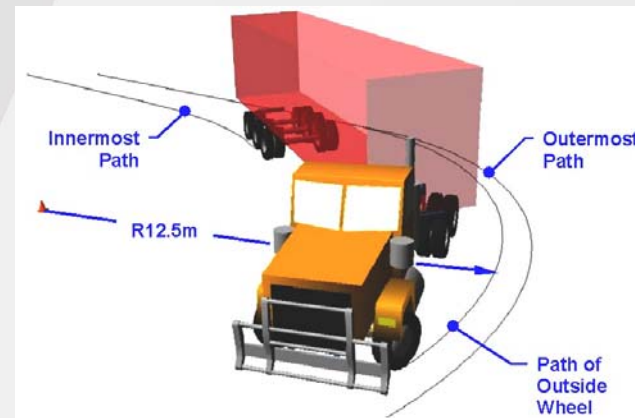
## Performance-based regulation

*"a nationally agreed process for assessing the access of innovative vehicle to the road system (which) has the potential to increase productivity"*

What the vehicle looks like



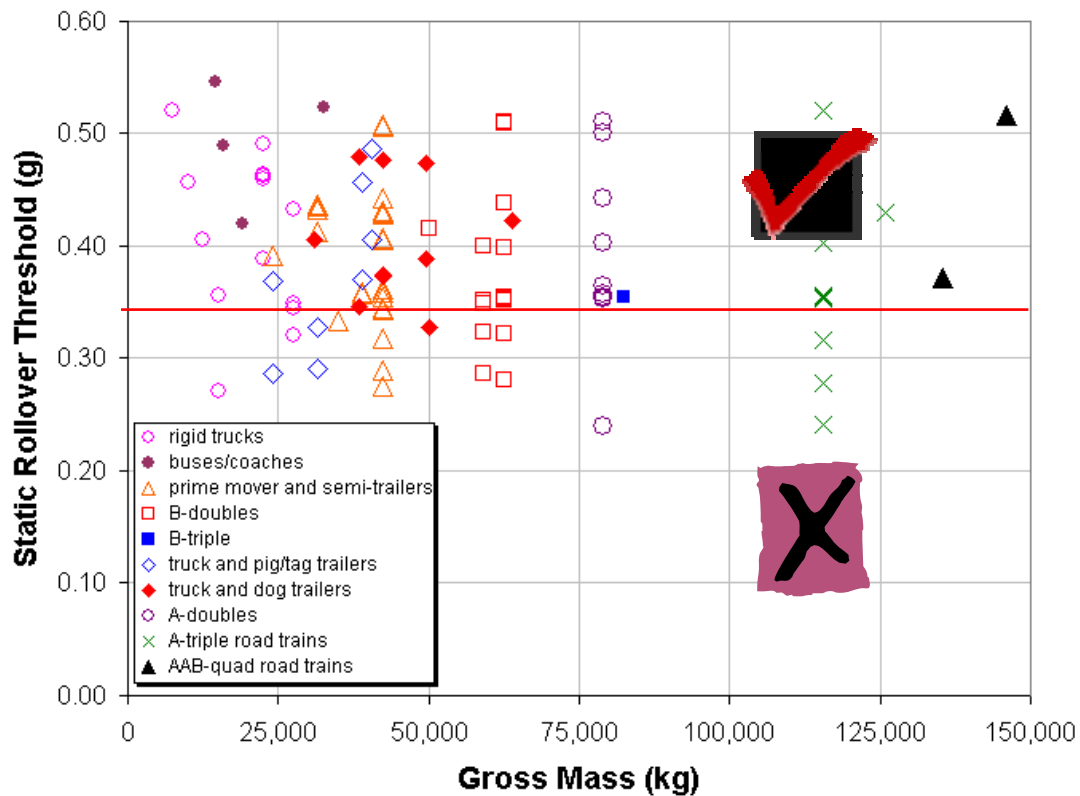
What the vehicle can do



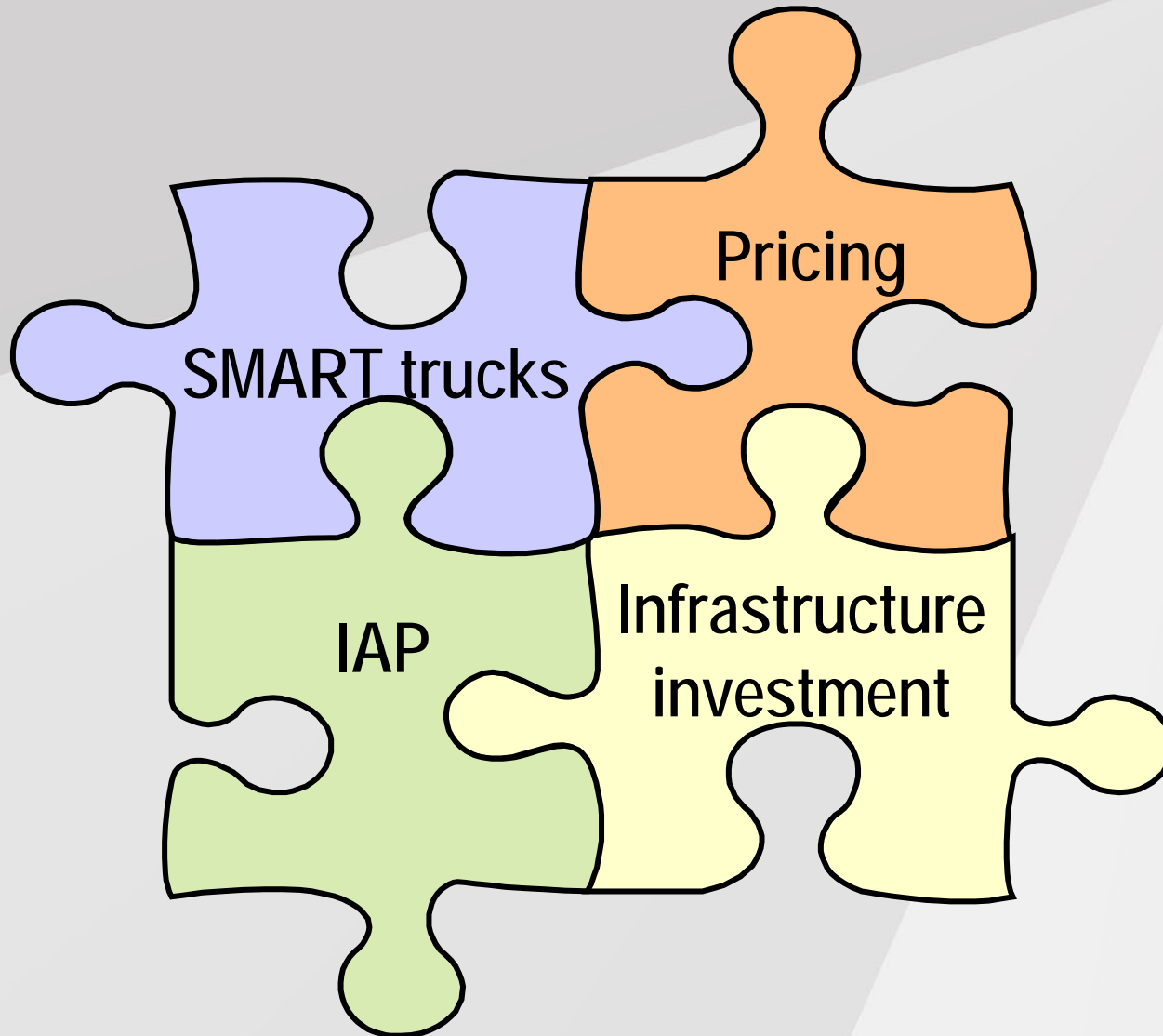
# Prescription is poor proxy for safety

## SAFETY:

- Mass and dimension is a poor proxy for vehicle performance
- Safety concerns over some high CoG vehicle configurations



# Other important elements



NTC outlined its transport vision to address the growing freight task

# Open for business



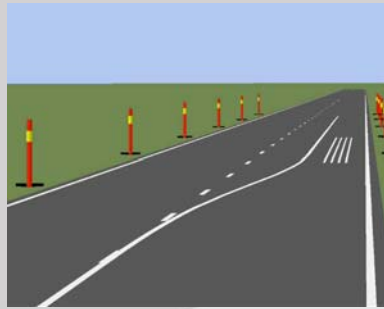
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A national assessment process through the Interim Review Panel (IRP)

- Operators can submit an application for a PBS/SMART truck to a case study lead agency
- applications are referred to the Interim Review Panel (IRP) – (advisory body with memberships from all jurisdictions)
- nationally consistent PBS assessments
- **5 combinations have been endorsed by IRP**
- more than 10 applications are being assessed
- ‘road testing’ of the process *transparently* before a permanent review body is established
- provide advice to the NTC on the:
  - Relevance of each standard
  - Rules for conducting PBS assessments
  - Proposed operating conditions; and
  - Enforcement guidelines



# PBS/SMART approval process



Proposed PBS/SMART  
vehicle

Computer simulation

Full-scale field test

Basic field test  
*(if required)*



Approval process  
*(currently advisory only)*



# PBS-based permits



National Transport Commission



Autobox



Tridem car carrier



Quad-axle



Trackaxle



tridem



5-axle truck-trailer



54'6" container



Port precinct roadtrain



'Mulligrub'

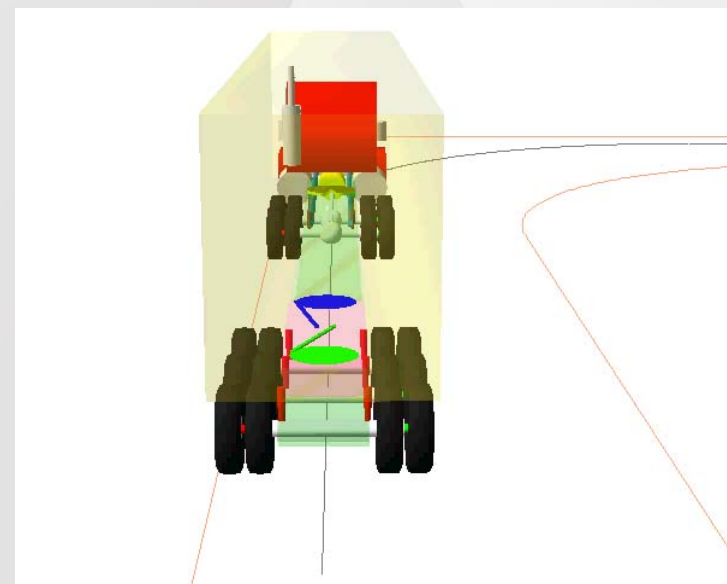


Floatliner

# PBS/SMART examples

## *Trackaxle combination*

- 19.2m overall length,
- 15.85m long semi
- 26 palettes (30% increase in productivity)
- Active steering system
- Meets PBS Level 1 standards

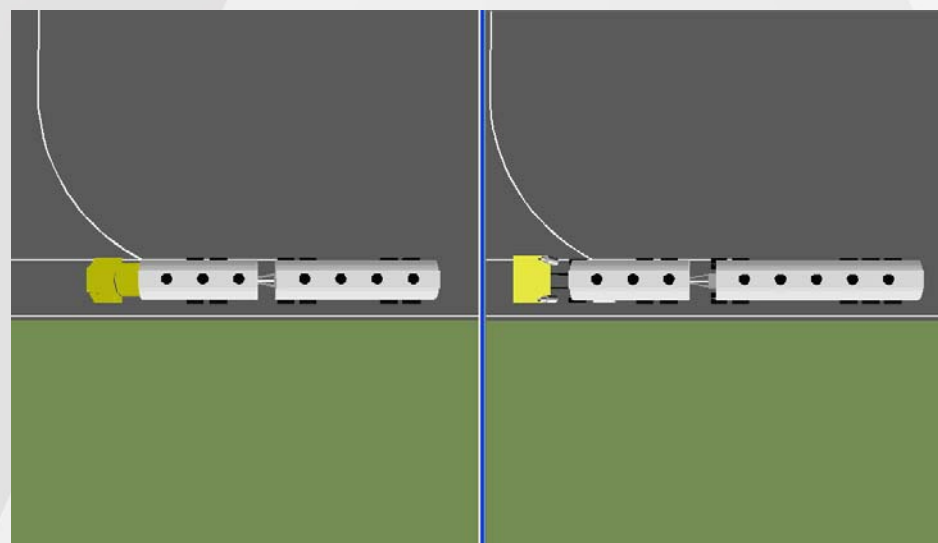


Simulation: MSD

# PBS/SMART examples

## *4-axle truck and 5-axle dog combination*

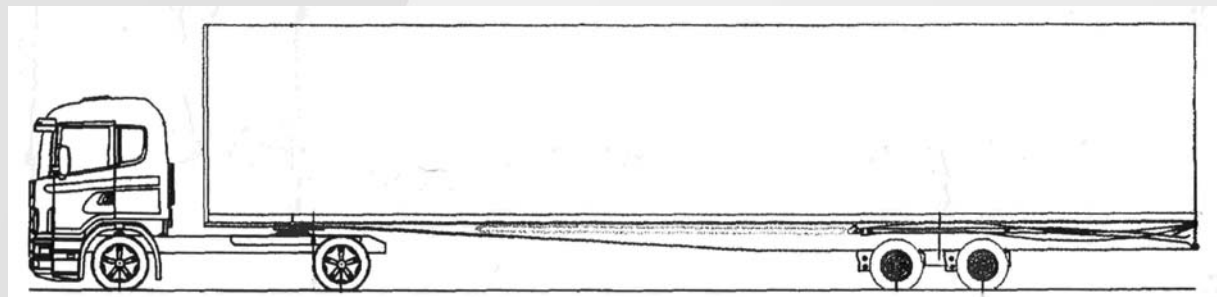
- 22m, 55t of GCM
- Superior dynamic performance
- Meets PBS Level 1 safety standards
- Meets PBS Level 2 infrastructure standards
- Significant safety benefits
- Productivity benefits
  - access
  - storage
  - flexibility



# PBS/SMART examples

## *Autobox combination*

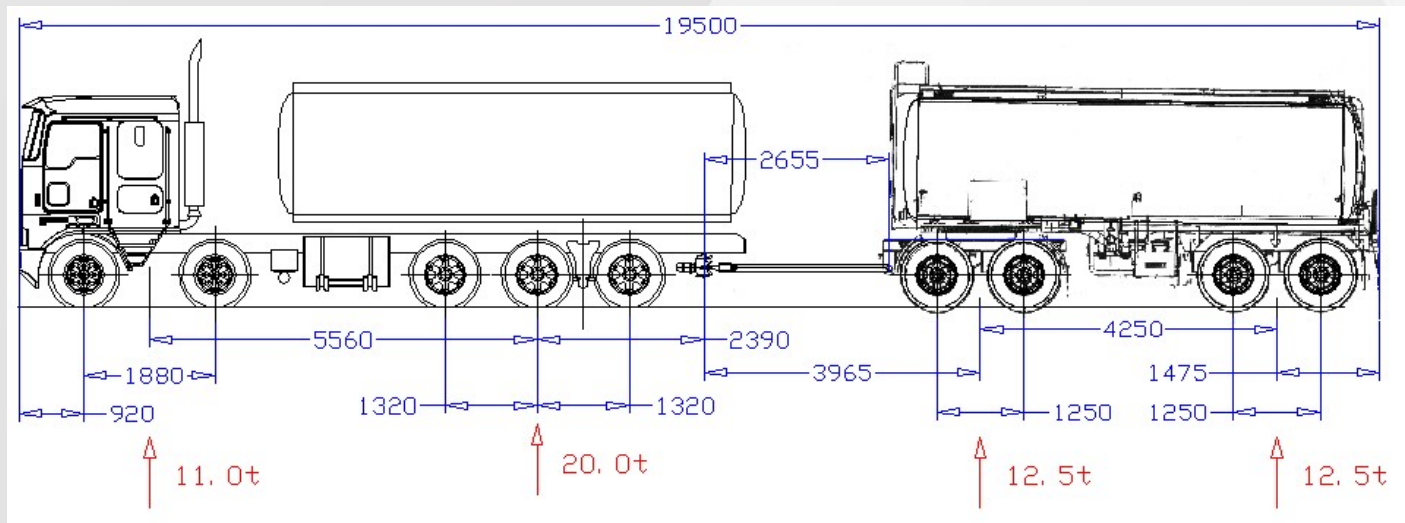
- 19m, 42.5t of GCM
- 4.6m high
- Meets PBS Level 1 safety standards
- Intermodal operation



# PBS/SMART examples

## *5-axle truck and 4-axle dog combination*

- 19.5m,
- 52t of GCM (PBS Level1)
- 56t (PBS Level2)
- Meets PBS Level 1 safety standards

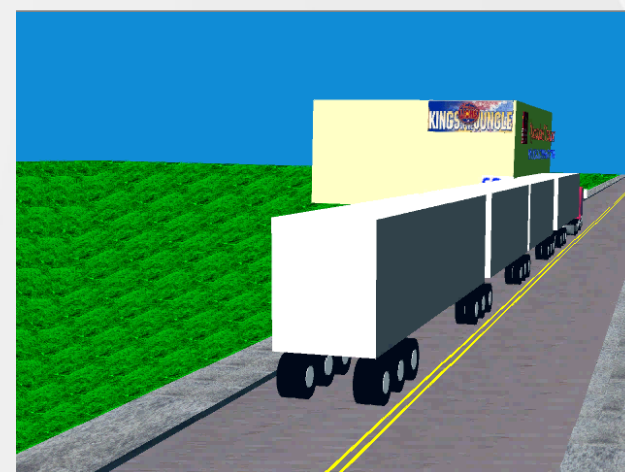




# PBS/SMART examples

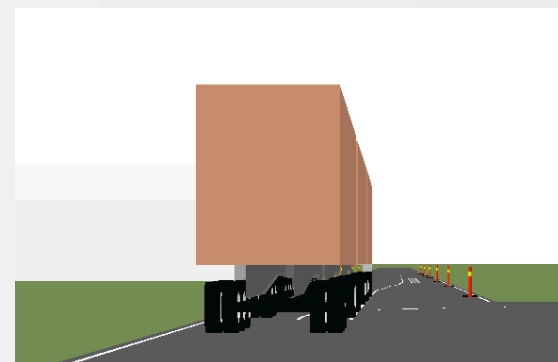
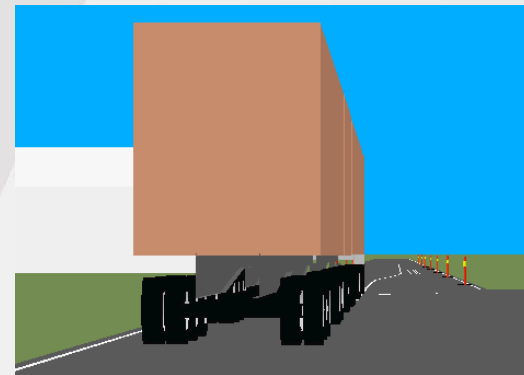
## *ABB-quad combination*

- Pm-semi hauling a B-triple
- 53.5m, 122.5t of GCM
- Superior dynamic performance
- Meets PBS Level 4 (except braking)
- Meets PBS Level 3 (except LSSP)
- Cannot be endorsed as a PBS combination
- PBS assessment by the driver: “it’s bloody great, I can light my cigarette while I am driving.....”



# Concerns

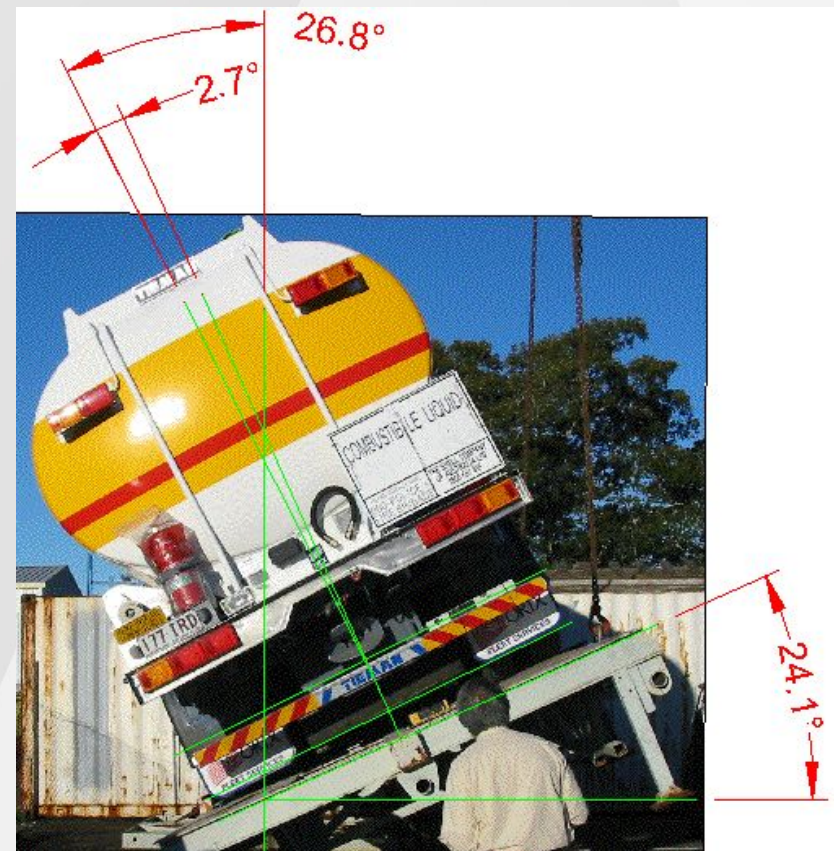
- vehicles that are being rejected under PBS are better than vehicles currently operating (BAB-Quad vs. type 2 road train)
- firms are required to provide business cases to seek permission to access the road network under the PBS application process
- prescriptive compliance requirements are unduly onerous





# Concerns cont.

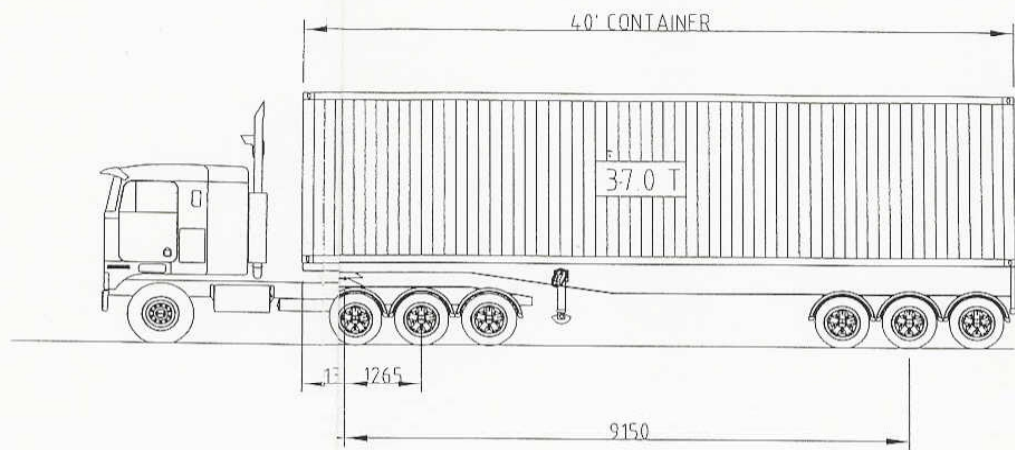
- The process takes too long
- Technical complexity and cost of the assessment process
- Access to networks controlled by local governments



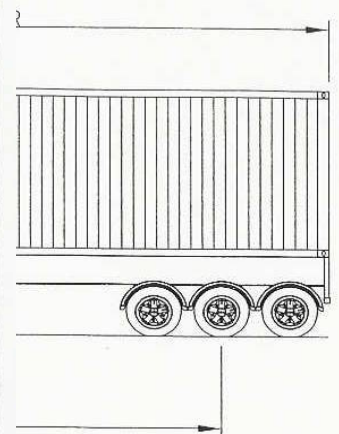
# Industry frustration



ILLEGAL



ITEM	DESCRIPTION	PART No.	QTY
PRIMOVER	9.00 T	-----	9.0 T
A-TRAILER	0.9 T	3.6 T	4.5 T
B-TRAILER	-----	1.0 T	4.2 T
PAYLOAD	13.1 T	17.9 T	50.3 T
GROSS	<u>23.0 T</u>	<u>22.5 T</u>	<u>68.0 T</u>



DESCRIPTION	PART No.	QTY
-----	-----	9.0 T
-----	-----	4.5 T
3.2 T	-----	4.2 T
19.3 T	-----	50.3 T
<u>22.5 T</u>	-----	<u>68.0 T</u>

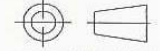
REV.	REVISION

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TRAILERS PTY LTD

THIRD ANGLE PROJECTION



DRAFTING STANDARD AS 110

SIZE: A3	DRAWN: L.BARKER	DATE: 26-05-04	DRAWING No: 90-0337
CHECKED:	DATE:	SCALE: 1:75	REV: A
SHEET: 1 OF 1			

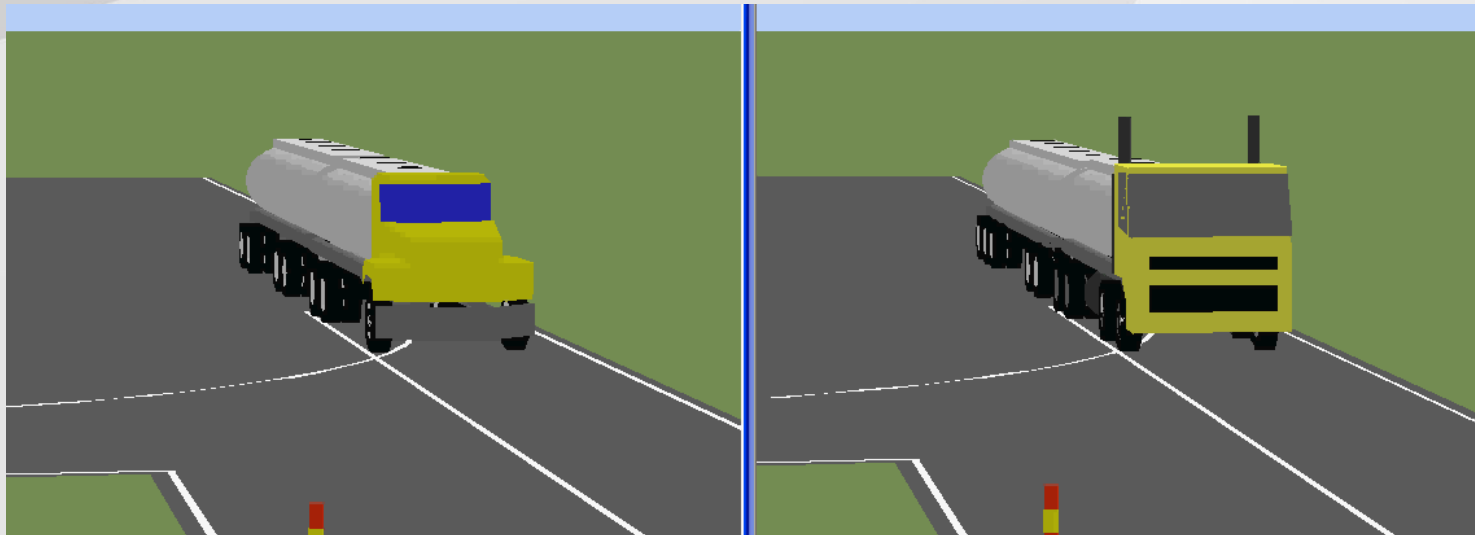


20'-40' SKEL B-DOUBLE  
CLIENT: F.C.L TRANSPORT

L.BARKER	DATE: 26-05-04	DRAWING No: 90-0337	REV: A
1 OF 1	SCALE: 1:75		

# Matching PBS/SMART trucks to the road network

*Performance determines level of access to the road network*



**LEVEL 4**

**LEVEL 1**

'whiplash' from a lane-change manoeuvre

# PBS/SMART Selection of heavy vehicles



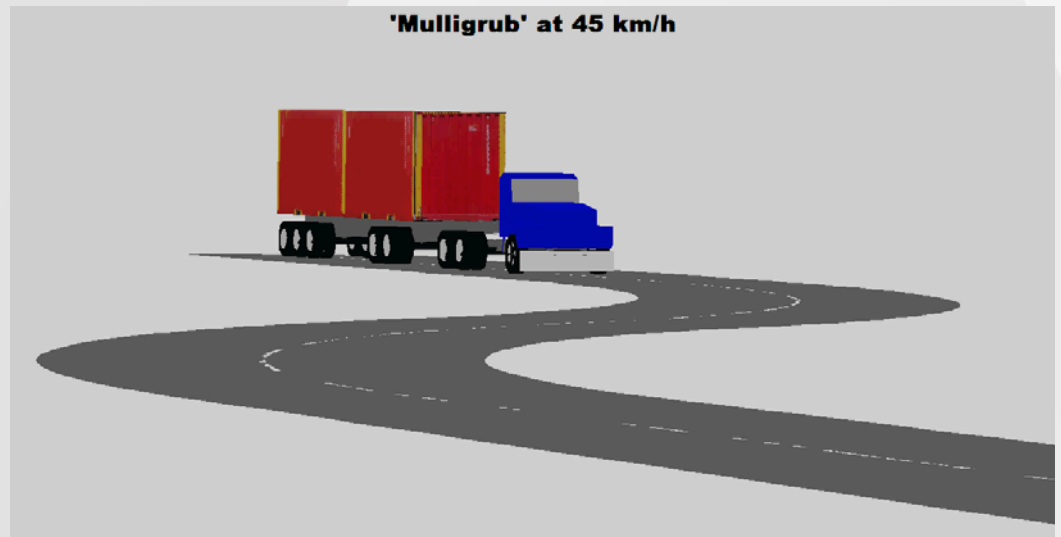
National Transport Commission



Quad Axle Trailer at 45 km/h

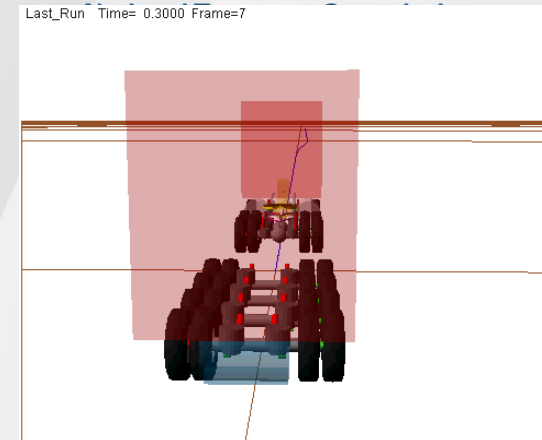


'Mulligrub' at 45 km/h



# Smart compliance

- Using IAP like systems for monitoring compliance
- 8 combinations running in Queensland
- These heavy vehicle combinations are fitted with GPS and on-board mass monitoring equipment
- Intelligent access conditions
- Monitoring:
  - Mass compliance (axle loads, GCM)
  - Route compliance
  - Tampering
- Third party reporting
- Non Compliance Reports (NCR)

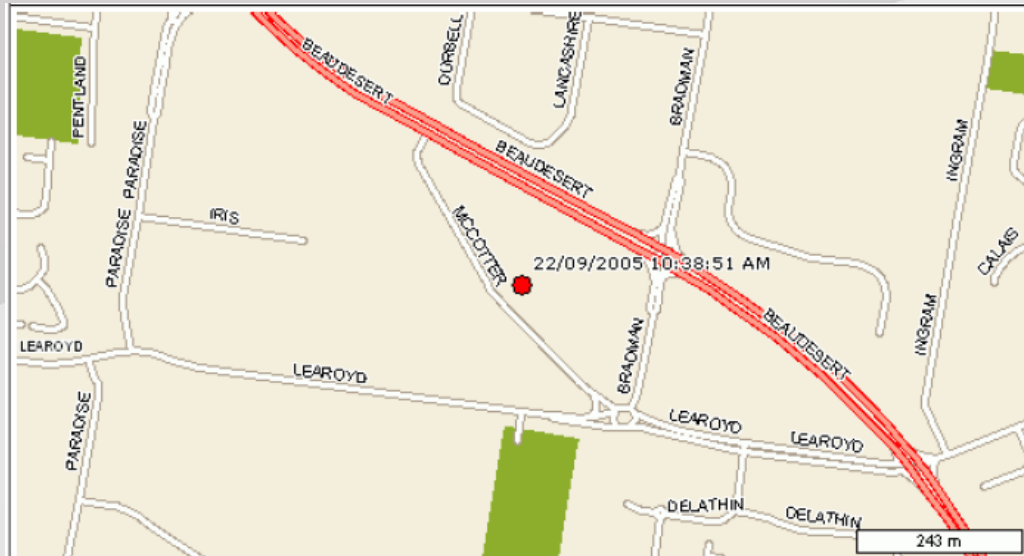


Simulation: MSD

# Using technology (IAP)



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IVU#	IVU#	Date	Time	Longitude	Latitude	Direction of travel	Speed	Tamper alarm	Location	MassA	MassB	MassC	MassD	MassE
Unknown	4-9-E-63-0001	22/09/2005	10:38 AM	153.03409	-27.59637	313	0		Fcl Depot	20960	31540			

Non Compliance Report Detail	
Begin Time	22/09/2005 10:38:51 AM
Start Position	Fcl Depot
Start Lat/Lon	-27.59637 / 153.03409
End Time	22/09/2005 10:38:51 AM
End Position	Fcl Depot
End Lat/Lon	-27.59637 / 153.03409
Duration	0 days 0 hours 0 mins

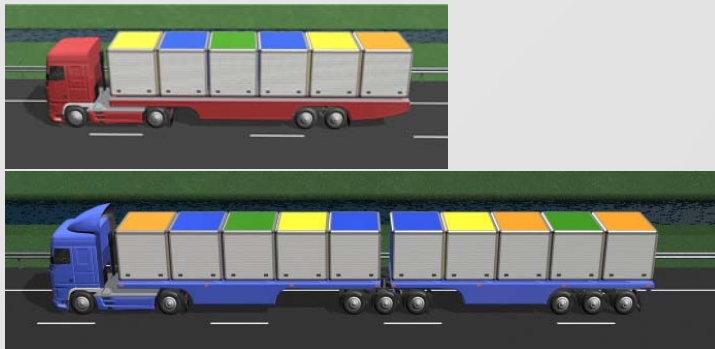
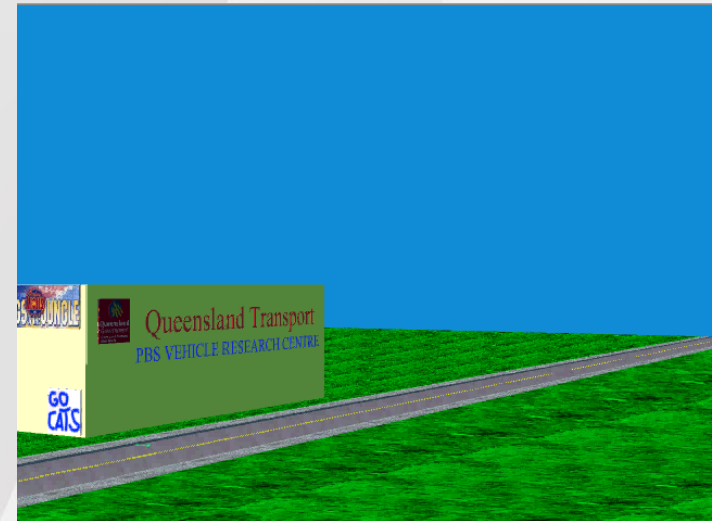
# Competitive advantage

*PBS might driven by:*

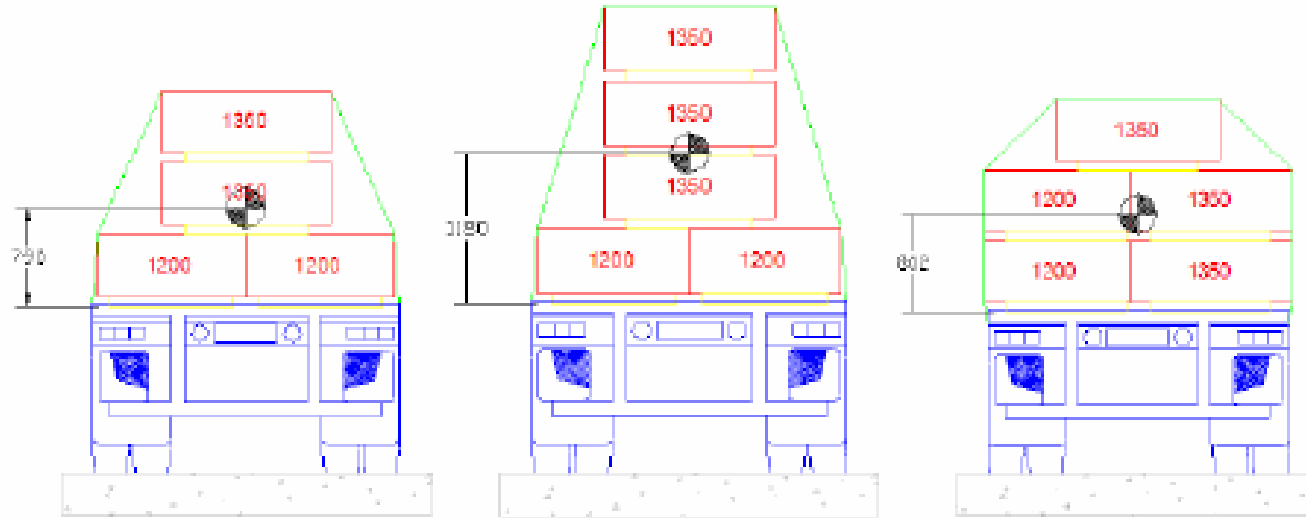
1. Modular, flexible approach (BAB-Quad)
2. Push the envelope (over-length, over-mass)
3. Commodity-driven (customised for paper reels, plasterboard, cars)
4. Supply chain optimisation (primary freight, logistics chain efficiencies)



National Transport Commission



# Innovative ideas.... Different loading under PBS



(a)

(b)

(c)



Photo (a)



Photo (b)



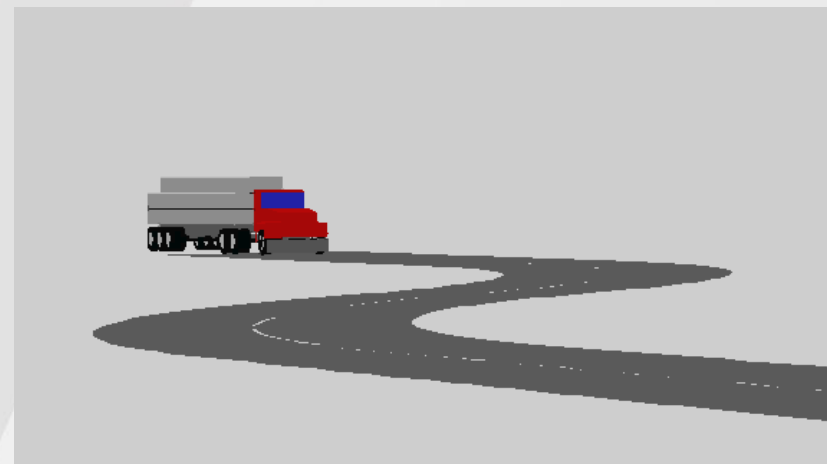
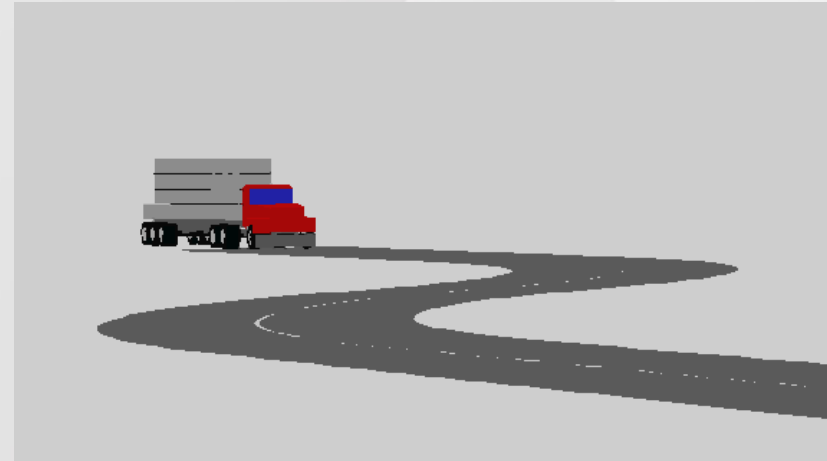
Photo (c)





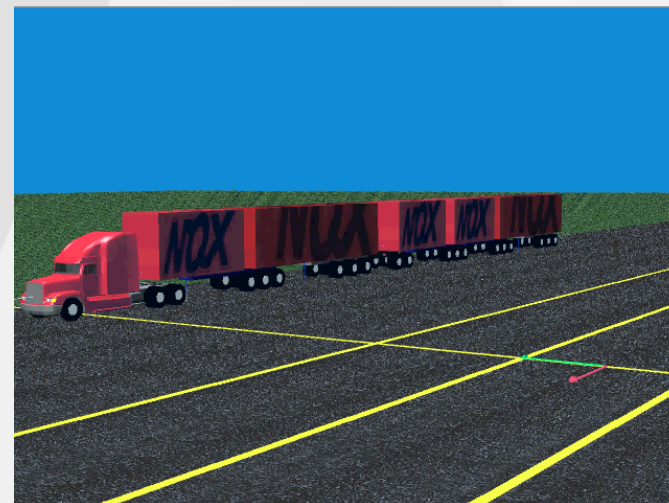
# Improved productivity and safety

- The loaded vehicles meet PBS safety and infrastructure standards
- Significant improvement in stability performance
- Extra 5-10t payload/unit
- 21-30% reduction in trip numbers



# Work in progress

- Further development of the national decision-making framework
- Development of guidelines
  - Assessment (rules)
  - Certification, inspection
  - Operational requirements
- Route classification by jurisdictions
- Review of the standards
- Infrastructure standards based on moving the *freight task*, not prescriptive vehicle equivalent
- Increased profile through a high-level Policy Steering Committee
- COAG has nominated a deadline for the implementation of PBS (Dec 2007)



# It's a difficult process

- “Progress is impossible without change, and those who cannot change their minds cannot change anything.”

Albert Einstein

- PBS is a new way of heavy vehicle regulation
- Never been done before
- We have scored a few tries!

Go Wallabies!

