



# Technology Convergence 2023: insights

14 November 2023

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Transporting New Zealand

## Driving our economy



- [Technology Convergence 2023 \(techconverge23.org\)](https://techconverge23.org)
- Personal insights and opinions, but it will mean different things to different people
- The emerging of new technologies is an opportunity to improve safety, productivity, environment, not withstanding we need to focus also on human interoperability



- International scientific research transport conference
- 72 papers, 180 delegates from all continents
  - Fuel efficiency
  - Performance based standards
  - Intelligent access
  - Electrification
  - Measuring mass (onboard, bridge, pavement)
  - Road measurement

# Technology offers solutions ....but when

- The Industrial Revolution was the transition from creating goods by hand to using machines. The period generally spanned from about 1760 to 1840.
- Climate is calling on the world to re-industrialise.
- When will we see a quantum leap in automation in transport:
  - Automated compliance (WIM or OBM)
  - Autonomous vehicles with intelligent access
  - Zero emission vehicles

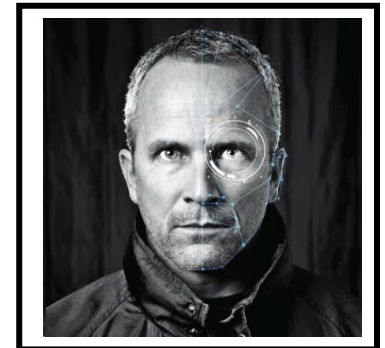
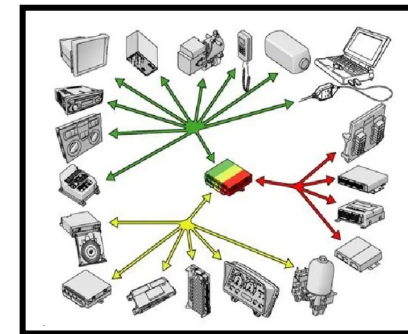
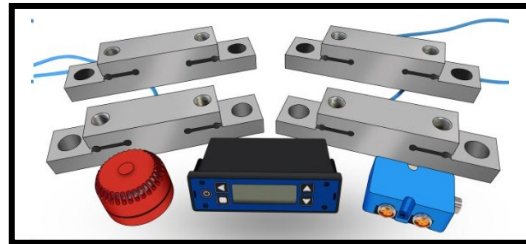
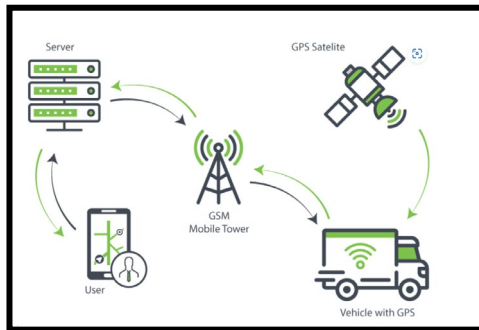
# Technology – potential solutions and risks

- “The challenges transcend traditional thinking”
- “The problem belongs to everyone so the problem belongs to no one”
- “Reimagine the future. New technology enable us to look forward. Don’t take the old approaches and deploy old systems”

# Change: technology



- Data storage (increased) and data processing (much cheaper)
- System interoperability (vs proprietary components and systems)
- Traffic, vehicle journey, vehicle weight, vehicle systems, people



# Change: focus of HVTT content

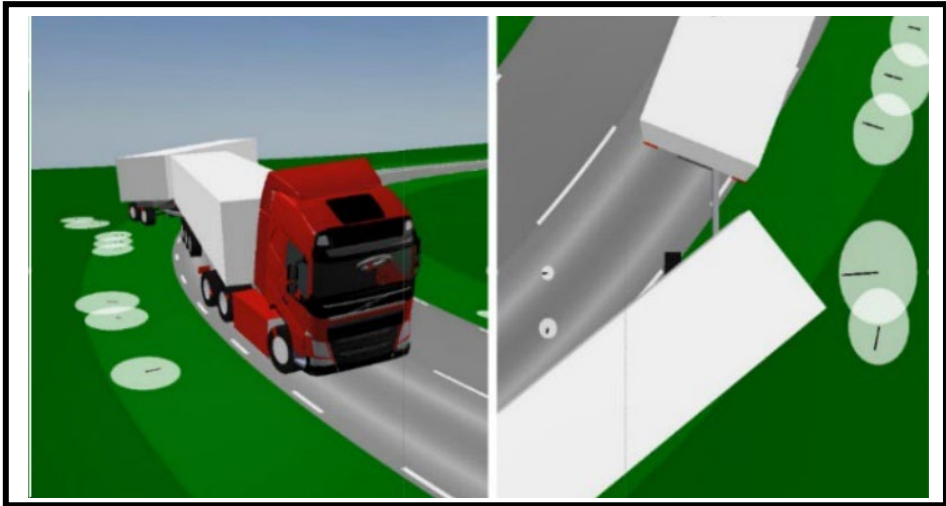
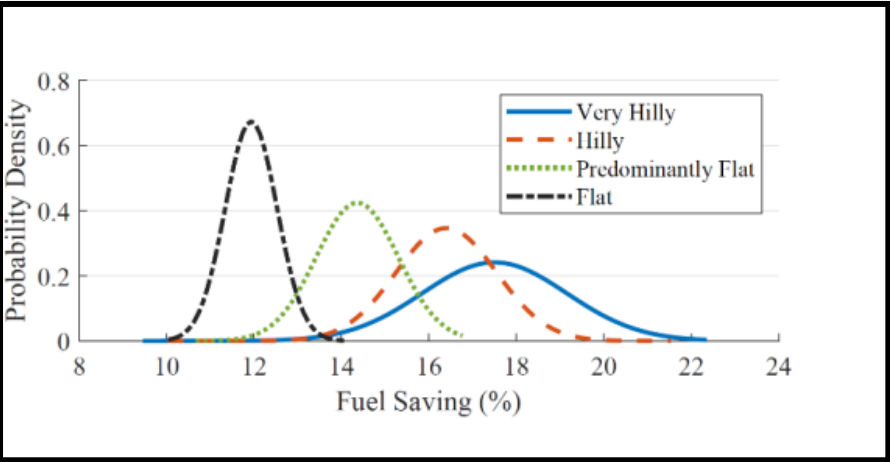
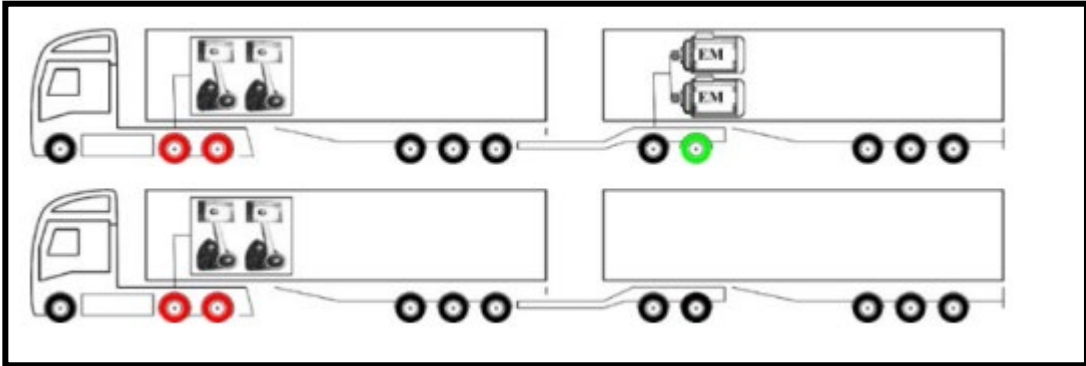
- Size/weight productivity, pavement damage and safety,
  - PBS
  - Braking systems and response times
  - Vehicle stability
  - Road friendly suspension
- Decarbonisation (fuel efficiency)
  - Rolling resistance of tyres
  - Benefits of lifting axles
  - Electrification
  - Vehicle and route assessment

# Pushing the boundaries

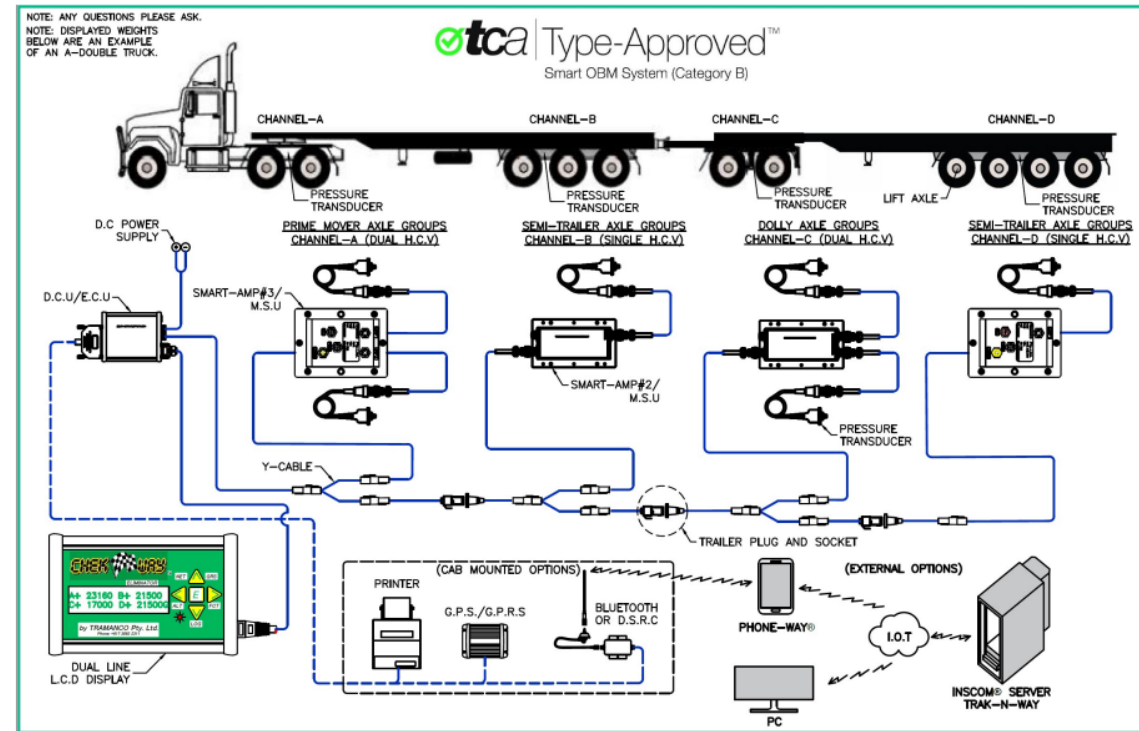
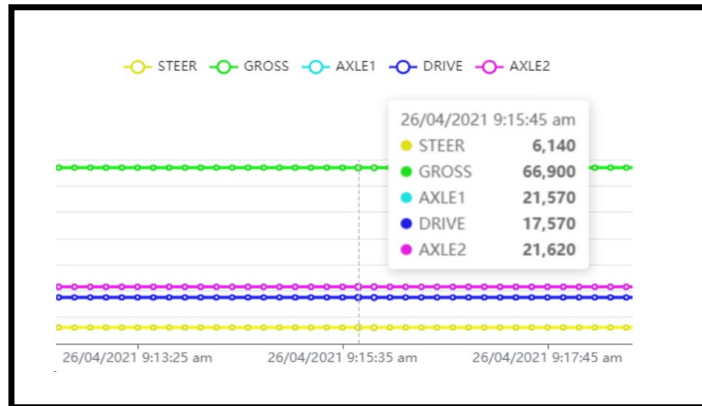




# Electrification e-dolly



# On board mass



TCA Approved Smart-OBM hardware and software to capture and upload the data to cloud-based servers where the data provides facts on mass, distance, location, speed for IAP

# Weigh in Motion (WIM) vs On board mass

**Table 1 – Adoption rates and scheme expansion using Smart On-Board Mass**

|  | January 2022 | July 2022 | January 2023 | July 2023 | October 2023 |
|--|--------------|-----------|--------------|-----------|--------------|
| Number of schemes associated with Smart OBM    | 2            | 3         | 6            | 6         | 14           |
| Number of vehicles transmitting Smart OBM data | 0            | 10        | 149          | 790       | 1301         |

Table 1 indicates the uptake of these schemes by the transport industry. Smart OBM allows the industry to gain additional access certainty and often increased access, increased mass and productivity, as well as participation in the sharing of data for improved road planning and management.

SMART ON-BOARD MASS IN AUSTRALIA – LEARNINGS AND INSIGHTS J, Gordon, G Hill TCA

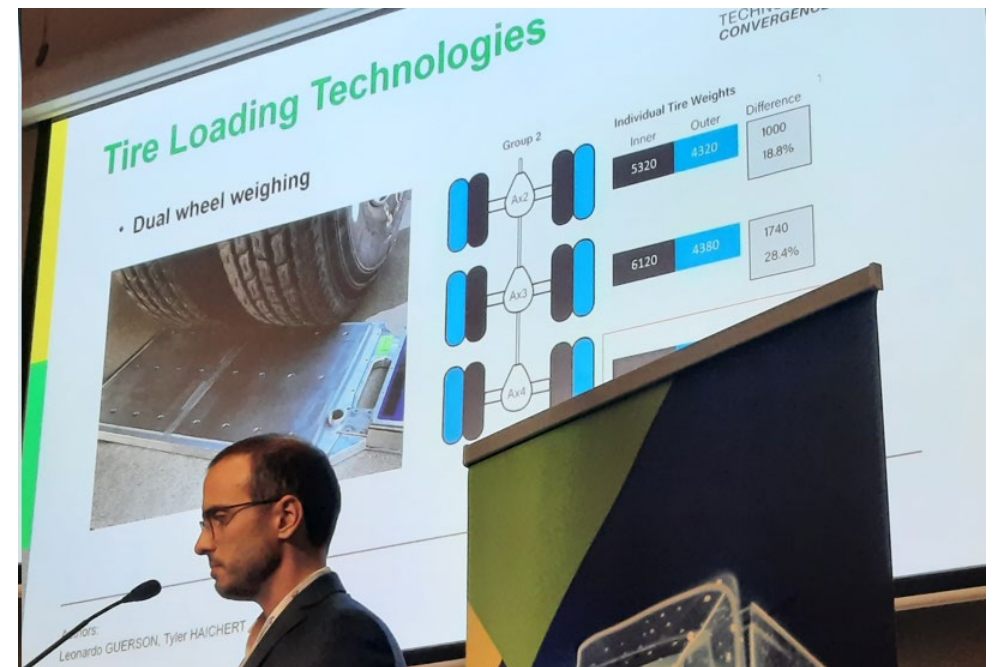
# Weigh in Motion (WIM)

Continues to be used for filtering to low speed weighing

No examples of HSWIM direct enforcement

## Extension of WIM capability

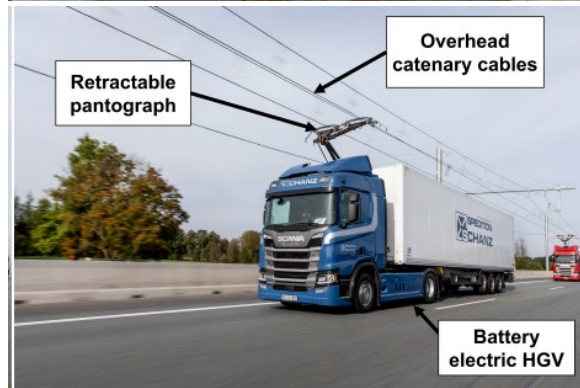
- Enhanced Tire Anomaly Detection (Pressure variance)
- Tire Type (Single, Dual, and Wide Based Tire).
- Tire Width.
- Lane Position.



# Weigh in Motion (WIM) vs On board mass

- Could onboard mass and data software with telematics obsolete the need for weigh stations?
- Could better sharing of other load data provide weight compliance assurance
- Could this technology unlock greater productivity and better controlled network access

# Electrification

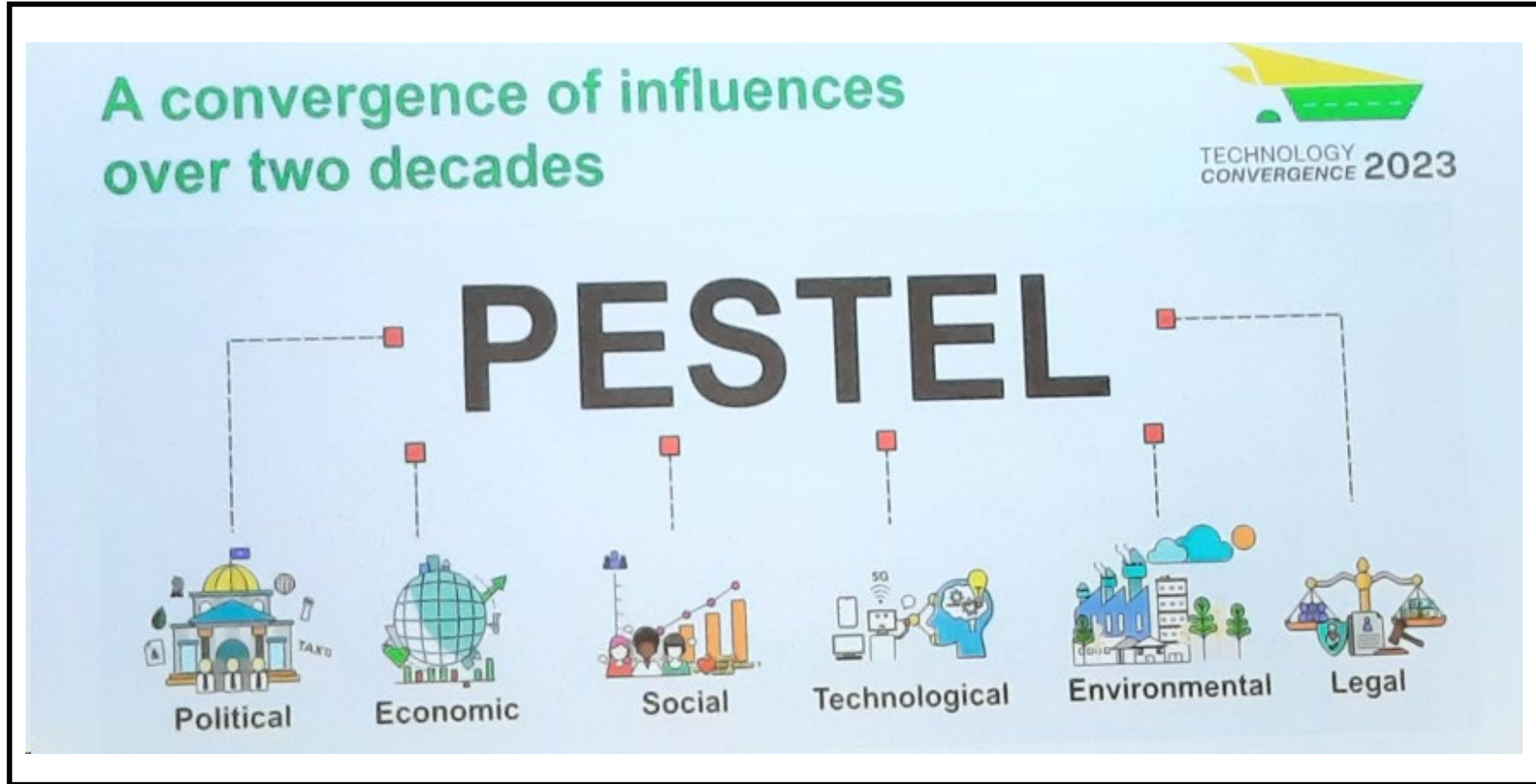


“Pony express”

# ZEV, LEV, and diesel ICE

- Infrastructure investment and planning seems a long way away
- Interim solutions needed
- Currently, insufficient focus and support to decarbonise current fleet


# Policy change





# Electrification e-dolly

## Shifting the Overton Window



TECHNOLOGY  
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Examples of how PESTEL influences have shifted the Overton Window:

|  |   |
|--|---|
| Intelligent Access is all about <i>enforcement</i> | Intelligent Access is used for a <i>variety of purposes</i>                   |
| Transport operator systems <i>can't</i> be used    | Transport operator systems <i>can</i> be used                                 |
| TCA is a certifier and administrator               | TCA is a certifier, administrator <i>and</i> provider of data-driven services |

# Policy change

## The art of the possible

"At any one time, some group of adjacent policies along the freedom spectrum fall into a window of political possibility.

Policies outside the window, either higher or lower, are politically unacceptable at the moment.

If you shift the position or size of the window, you change what is politically possible" (Lehman 2010).



# Conclusions

- Australian National Trucking Research Organisation: heading fast towards a “come to Jesus moment” on decarbonisation targets.
- Use of new technology and deployment of solutions in NZ some way off. Funding and collaboration between the appropriate stakeholders to develop a cohesive strategy are major challenges
- Incumbent on our sector to continue advocating a sensible way forward and shift the increasing risk and demands on operators

