How Future Vehicles Will Revolutionise Freight Logistics
- Creating Australia’s Logistics Future

Dr Steve Nuttall
Director, ACA Research
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The Business Case
For CAV In Logistics
Why Do We Care?

40% • 1.3 million people die each year in road crashes globally

40% • An estimated $6.5 billion boost to the Australian GDP

Top priorities in managing road transport fleets

- Increasing Safety (e.g. Running driver training programmes)
- Reducing Running Costs (e.g. Reduced fuel costs)
- Increasing Productivity (e.g. Greater asset utilisation)
- Improving Customer Servicing (e.g. Faster deliveries)
- Reducing Compliance Costs (e.g. Reducing fines & infringements)
Driver fatigue is a major concern in the road freight transport industry. 72% of drivers experience fatigue on trips. More than 10% of drivers work more than 80 hours a week. Drivers who don’t comply with working hour regulations are 30% more likely to be involved in an accident. Contributing Factors:

- Driving hours
- Insufficient breaks
- Delivery schedules
- Economic pressures
- Loading delays

1 in 8 feel unable to refuse unsafe schedules.
Transport and logistics companies are looking for fully integrated technology solutions.
Many organisations are constrained by pre-digital processes and technologies. But that’s changing.

<table>
<thead>
<tr>
<th>Issues</th>
<th>Technological Solutions</th>
<th>New Business Models</th>
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<tbody>
<tr>
<td>Drivers</td>
<td>Shortage Skills Safety</td>
<td>COYOTE</td>
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<td>Red tape</td>
<td>Speed Log books Mass limits</td>
<td>OTTO</td>
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<tr>
<td>Margin squeeze</td>
<td>Fuel costs Maintenance Productivity</td>
<td>cargomatic</td>
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<tr>
<td>Competition</td>
<td>Cheaper Faster Better</td>
<td>UBER RUSH</td>
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<td></td>
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<td>amazon.com Prime</td>
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CAV In Logistics: Science Fiction Or Fact?
Automated Trucks: Science Fiction or Fact?

The vision of long-distance platoons of trucks all running on intelligent highways without drivers has been a topic for some years... but the reality is not far away.....
What Do Road Transport Operators Know And Think About Autonomous Vehicle Technology?

50% are more informed

They’re total Science Fiction

13%

Not anytime soon

46%

Seems to have potential

24%

Definitely going To happen

18%

50% are less informed

23%

57%

11%

9%
latest trial of autonomous trucks
Amazon might use driverless vehicles to deliver packages in the future
Ars Technica - 25 Apr. 2017
... but Amazon could use autonomous cars, trucks, forklifts, and drones to ...
Alphabet's Waymo just began trials of its self-driving car service in ...

Truck platooning trials to start on toll highway
Prime Mover - 3 Apr. 2017
Platooning involves creating pairs of semi-autonomous commercial trucks. Vehicle-to-vehicle communication allows the vehicles to travel close ...

Uber Fights To Keep Google Self-Driving Car Lawsuit From Going ...
Forbes - 27 Apr. 2017
... and not in a public trial, the latest twist in the high-stakes legal battle over ... At stake is Uber's ability to push forward with its own autonomous ... A possible trial in the case looms this summer -- if the matter isn't sent to arbitration first. ... company, Otto, with a goal of creating self-driving commercial trucks.
Waymo vs. Uber lawsuit: 10 things you need to know
In-Depth - CNET - 27 Apr. 2017

Singapore gears up for autonomous vehicle technology
Enterprise Innovation - 27 Apr. 2017
From autonomous public buses, driverless taxis to truck platooning, Singapore ... We take a look at some of Singapore's autonomous vehicle trials and ... to deepen understanding on the current state of the technology and to ...
3 Adoption Plans For CAV
A third of fleets remain sceptical of autonomous vehicle capabilities, but this is likely to change as road testing is completed in Australian conditions.

Timeframe for Introduction of Autonomous Vehicles Into Your Fleet:

- **37% Sceptics** (Not Suitable)
- **18% Later Adopters** (10 Years+)
- **10% Early Adopters** (< 10 Years)
- **35% Rejecters** (No Interest)

Base: Dec 2016: n=207, Early adopters n=20, Later adopters n=37, Sceptics n=77, Rejecters n=73

When do you think this type of autonomous vehicle will become a part of your fleet?
Larger fleet operators are likely to drive the change in mindset towards autonomous vehicles

Timeframe For Introduction Of Autonomous Vehicles Into Your Fleet

<table>
<thead>
<tr>
<th></th>
<th>EARLY ADOPTERS</th>
<th>LATER ADOPTERS</th>
<th>SCEPTICS</th>
<th>REJECTERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NET</td>
<td>10%</td>
<td>18%</td>
<td>37%</td>
<td>35%</td>
</tr>
<tr>
<td>1-5 Trucks</td>
<td>6%</td>
<td>11%</td>
<td>35%</td>
<td>49%</td>
</tr>
<tr>
<td>6-25 Trucks</td>
<td>11%</td>
<td>14%</td>
<td>43%</td>
<td>32%</td>
</tr>
<tr>
<td>26-49 Trucks</td>
<td>8%</td>
<td>31%</td>
<td>38%</td>
<td>23%</td>
</tr>
<tr>
<td>50+ Trucks</td>
<td>19%</td>
<td>34%</td>
<td>31%</td>
<td>16%</td>
</tr>
</tbody>
</table>

Base: Dec 2016: n=207, 1-2 Trucks n=47, 3-5 Trucks n=37, 6-25 Trucks n=65, More than 25 Trucks n=58
N2. When do you think this type of autonomous vehicle will become a part of your fleet?
4 Expected Benefits Of CAV
Half of fleets think autonomous vehicles will lower operating costs, around 40% think they will improve safety, while 43% can’t see any potential benefit.

Perceived Benefits of Autonomous Vehicles To Your Business

- Lower staff costs: 40%
- Lower fleet running costs: 27%
- Lower compliance: 23%
- Lower fleet repair costs: 21%
- Improved safety: 39%
- Higher vehicle efficiency: 29%
- Enhanced driver: 26%
- Improved customer service: 14%
- Don’t know: 30%
- No Benefit: 13%

LOWER COSTS 50%
IMPROVE SAFETY 39%
IMPROVE OPERATION EFFICIENCY 39%
IMPROVE CUSTOMER SERVICE 14%
DON'T KNOW/NO BENEFIT 43%

Base: Dec 2016; n=207
N3. What do you see as the potential benefits that this type of autonomous vehicle might offer your business?
Lower compliance costs also stand out (within overall cost reduction) as a key selling point for early adopters of autonomous vehicles.

<table>
<thead>
<tr>
<th>Perceived Benefits of Autonomous Vehicles To Your Business (Within Fleets Who See Benefits In Autonomous Vehicles)</th>
<th>Early Adopters</th>
<th>Later Adopters</th>
<th>Sceptics</th>
<th>Rejecters</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOWER COSTS 50%</td>
<td>95%</td>
<td>76%</td>
<td>43%</td>
<td>33%</td>
</tr>
<tr>
<td>IMPROVE SAFETY 39%</td>
<td>85%</td>
<td>73%</td>
<td>31%</td>
<td>16%</td>
</tr>
<tr>
<td>IMPROVE OPERATION EFFICIENCY 39%</td>
<td>80%</td>
<td>70%</td>
<td>29%</td>
<td>22%</td>
</tr>
<tr>
<td>IMPROVE CUSTOMER SERVICE 14%</td>
<td>40%</td>
<td>24%</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td>DON'T KNOW / NO BENEFIT 43%</td>
<td>5%</td>
<td>16%</td>
<td>48%</td>
<td>62%</td>
</tr>
</tbody>
</table>

Base: Dec 2016 See benefits in autonomous vehicles: n=121, Early adopters n=39, Later adopters n=32, Sceptics n=40, Rejecters n=30

N3. What do you see as the potential benefits that this type of autonomous vehicle might offer your business?
Building Australia’s CAV Infrastructure For Logistics
Transport will generate teraflops (a trillion floating point operations per second) of data from on infrastructure comprising of:

- GPS co-ordinates
- Sensors on trucks
- Sensors on cargo
- Digitized street maps,
- Road networks
- Traffic alerts
Where are we at?

To date heavy vehicle autonomous trials relate to individual trucks and do not examine how automation applies to combination vehicles or fleets.

Rio Tinto currently has 69 automated heavy vehicles in operation at its iron ore mines in Western Australia, which are remotely controlled from Perth (Rio Tinto, 2016).

The National Transport Commission is preparing guidelines for the first trial of automated heavy vehicles in 2017.

Australia will undertake the first trial of automated heavy vehicles in Queensland in 2017.
The Freight Logistics Revolution
Improving Last Mile Efficiency

The benefits to be gained from bringing the same level of efficiency to the last mile as there is to the first thousand is attracting attention. There will be more focus on reducing inefficiencies around the final part of delivery.
Predictive Remote Maintenance

Satellite technology will be applied at scale enabling truck manufacturers to continuously monitor vehicles, diagnose any future faults in advance and remotely update software.
Insuring the System

As trucks no longer crash and no inventory is stolen, fleet insurance shifts from the individual and their truck car to whole fleets and, ultimately, the entire system. This significantly changes how risk is managed and shared.
Electric Vehicles And Better Battery Storage

Improvements in battery and hydrogen energy storage make renewable energy more reliable and so accelerate electric vehicle growth and support greater distributed generation.
The Value Of Data

There is undoubtedly a huge economic incentive to generate and collect data from whatever sources it becomes available. As more data from more things becomes available, we can expect to see a data “land grab” by organisations.
A Data Marketplace

Data is a currency, it has a value and a price, and therefore requires a market place. An ecosystem for trading data is emerging and anything that is information is represented in a new data marketplace.
“We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. Don't let yourself be lulled into inaction.”

- Bill Gates
Thank You!

For more information please contact:

Steve Nuttall, Research Director
ACA Research
Tel: +61 2 9927 3306
Email: snuttall@acaresearch.com.au
Level 6, 107 Mount Street
North Sydney, NSW, 2060