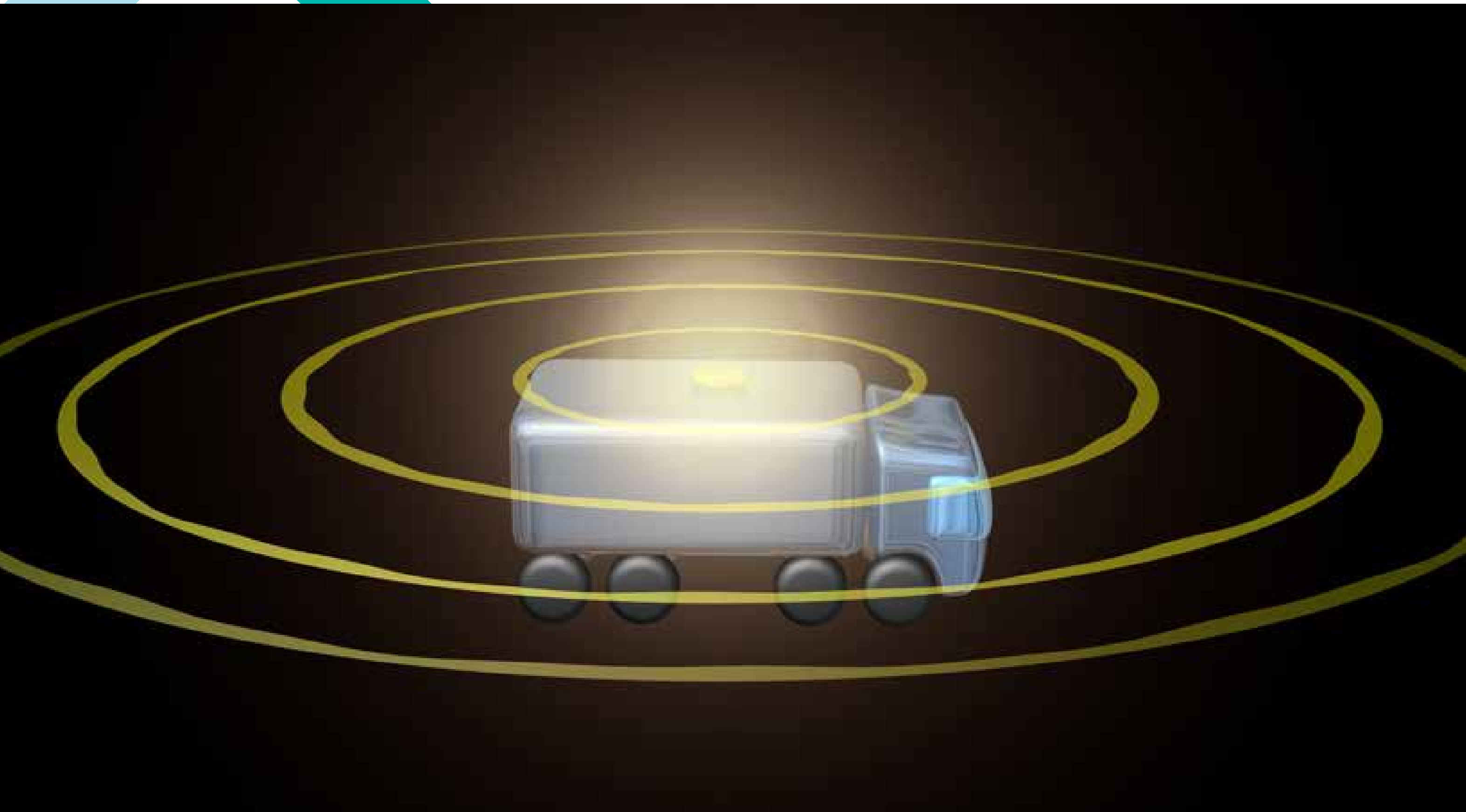

Twin Drivers of Change

DRIVERS OF CHANGE - PART TWO

by BY DR JIM STANFORD AND MATT GRUDNOFF *as adapted by WA Transport Magazine. // Centre for Future Work at the Australia Institute*

The potential for driverless technology has been much discussed in the media and policy discussions, and it is certainly true that many driver and operator functions face a high degree of automability. Railroad and heavy truck drivers face the highest vulnerability in this regard, due to the enhanced controllability of the driving environment in those applications.

Indeed, the implementation of driverless vehicles in carefully controlled public transit, industrial and trunk road settings is already occurring. Drivers who need to exert greater flexibility and judgment in their work

BOX ONE

Major Applications of New Technology in Transportation

- Position, localization, and mapping capacities and functions.
- Monitoring and surveillance technologies to track vehicle and staff locations.
- Assisted driving, sensing, and perception supports; partial automation of driving task (SAE Tiers 0-1).
- Increasing automation of driving task (SAE tiers 2-5).
- Connected vehicle technology allowing better coordination/communication across fleets.
- Big data analytics, deep learning, use of algorithms (in planning routes, service, and customer contacts).
- Extensive computerisation in data management, including by drivers (e.g. paperless document systems).
- Advanced data systems to enhance security and privacy standards in transportation.

(including smaller truck, delivery truck, marine and airline operators) would seem to face a less extreme, but still significant, vulnerability to automation.

Many other support and ancillary functions are also fertile ground for the application of labour-saving and labour-replacing technologies. Indeed, cargo agents, clerks, and sales workers face the highest likelihood of automation of any transportation-related occupations.

So it is important not to place undue focus on the potential for automating driving; in fact, stakeholders must be cognizant of the probability of automation across all aspects of transportation work. Box One lists some of the various ways in which artificial intelligence and related technologies will affect transportation work.

The transition to driverless operating technologies will be incremental in nature, as firms, workers, customers and governments adapt to the potential of these systems, and make the necessary investments (in capital, skills, infrastructure, and regulation) required to implement them.

The Society of Automotive Engineers (SAE) has developed a six-tier ranking of automated driving functions and capacities, which recognises the incremental adoption of these technologies. The lowest tiers include driver-assistance features already in widespread use. Steering, speed control, and signaling functions are the easiest tasks to automate – and some applications (in industrial vehicles, intercity truck fleets, and other settings) already incorporate these features.

The expansion of automation to situations requiring more judgment, monitoring of an uncontrollable environment, and quick responses to changing stimuli will be more challenging. Moreover, the equipment and infrastructure required in order to organise and implement driverless vehicle systems are complex, expensive, and challenging.

The viability of driverless technology will require huge investments in developing compatible roadway, communication, and control systems – investments that will certainly extend well beyond the capacities of any individual firm. In short, many hurdles will need to be overcome before these systems will be able to operate in a real-world context.

Box Two summarises the operational and financial constraints that will limit the pace of automation in driving and other transportation tasks. Box Two also summarises some of the potential benefits of transportation automation for the sector, and for broader society.

In conclusion, we need a more nuanced and complex understanding of the impact of new technologies on transportation employment. To be sure, computers and other machines are becoming capable of performing a much broader range of tasks – including those involving judgment, flexibility, and responses to uncontrollable environments. And transportation seems particularly ripe for the application of those technologies.

At the same time, there are many prerequisites and barriers that must be negotiated before we see the widespread use of many of those technologies in real-life applications. And there will be other sources of continuing or new demand for labour (including in transportation), that will mute or offset at least some of the displacing effects of new technologies when they are deployed.

None of this gives reason for complacency: huge changes are coming in both the quantity and the nature of transportation work, and not solely because of technology. Stakeholders need to prepare to make the most of these changes.

In the next edition of WA Transport Magazine will be the third installment of the 'Twin Drivers of Change' - Disruptor #2: Work Organisation and Employment Relationships.

BOX TWO

Constraints and Benefits of New Technology in Transportation

CONSTRAINTS

- Infrastructure.
- Proof of safety.
- Security.
- Social acceptance.
- Regional impacts.
- Capital investment.
- Management adequacy.
- Lag times to phase in new equipment.
- Insurance.

BENEFITS

- Improved safety.
- Greater fuel efficiency.
- Efficient traffic management.
- Reduced greenhouse gas emissions.
- General transportation cost reductions.
- Enhanced mobility for people with disabilities.
- Potential improvements in job quality.

> IT IS IMPORTANT NOT TO PLACE UNDUE FOCUS ON THE POTENTIAL FOR AUTOMATING DRIVING; IN FACT, STAKEHOLDERS MUST BE COGNIZANT OF THE PROBABILITY OF AUTOMATION ACROSS ALL ASPECTS OF TRANSPORTATION WORK

To read the full report visit: www.twusuper.com.au/the-future-of-transportation-work/