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Quantum Computing

for Transportation

1

2

3

4

5

6

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1. What is Quantum Computing?

Quantum computing is a rapidly developing technology that focuses on the principles of Quantum theory, which explains the behaviour of matter and energy at an atomic and subatomic level.

Simply put, quantum computing harnesses the laws of quantum mechanics to solve problems too complex for classical computers to solve in a timely and accurate manner.

2. What are the benefits of quantum computing?

Quantum computers are incredibly fast and efficient. They have the power to perform calculations that non-conventional computer could do in a reasonable amount of time. They are able to solve extremely complex problems that a traditional computer simply isn't capable of.

3. How is quantum computing used in everyday life?

There are a growing number of applications for quantum computing as the technology matures. Cybersecurity, pharmaceutical research and drug development, financial modelling and traffic optimisation are all benefiting from quantum computing.

Quantum computing can assist in route optimisation, traffic flow control, predictive analysis of transport and logistics issues that will provide an optimised outcome for business owners and the public.

5. What benefits may this deliver to Australians & our community?

The use of quantum computing in transport services has a range of benefits for the community. It can deliver a reduction in travel time for commuters; a better delivery of transport services and support to the community and the broader industry; reduced greenhouse emissions from more efficient travel and reduced distance travelled; reduced wear and tear on transport resulting in longer life spans.

6. What kinds of transport solutions could Quantum computing be used for?

Intelligent Traffic Control

Optimisation of the transport network enabling vehicles to avoid disruptions before they happen.

Dynamic Scheduling

Dynamic calculation of public transport vehicle schedules and roster allocation of drivers, in near real time, to enable more efficient use of network services, including under network disruption.

Mobility as a Service & on-demand network management

Manage large scale, multimodal (private & public) on-demand transport options for customer and vehicle allocation & routing.

Predictive maintenance & anomaly detection

Predict potential maintenance issues or other anomalies for resolution or pre-emptive maintenance alerts, as well as infrastructure maintenance rostering and management.

Demand forecasting for operational decision support

Forecast in real-time future customer patronage on the network and vehicles for the day ahead, especially during disruption.

Autonomous vehicle management

Manage operations and performance of future large scale integrated and connected autonomous vehicle network.