ADELAIDE
SOUTH AUSTRALIA

Government of South Australia
Department of Planning,
Transport and Infrastructure

Future Mobility Lab Fund

A test bed for innovation in transport

Forward

Future Mobility – Innovation in Transport

Adelaide is well on the way to becoming a Smart City and with an enormous capacity for innovation, we are eager to embrace a better connected, more sustainable future.

We are on the cusp of a new era in automotive technology with enormous potential to save lives, reduce greenhouse gas emissions, and transform mobility for people and goods across South Australia. Our roads are already some of the safest in the world and increasing advanced driver assist, connected and autonomous technologies have the potential to help cut the number of accidents further.

The South Australian Government has taken a strong leadership approach to position the state as a test bed for transport innovation. Achievements include:

- Leading the nation in 2015, when it hosted the first on-road demonstration of a driverless vehicle on Australian soil.
- Being the first Australian state to enact legislation to conduct autonomous vehicles trials.
- Establishing the ADVI Centre of Excellence in Adelaide and supporting the 1st and 2nd International Driverless Vehicle Conference in Adelaide.
- The $10 million Future Mobility Lab Fund to support projects that demonstrate, develop, or contribute to the applied research and implementation of future mobility technologies.
- Expanding network of electric charging stations across the state.

At a national level the South Australian government is contributing to the national policy agenda and is working to support a regulatory environment that encourages safety and fosters innovation.

We are eager to unlock and attract industry investment to South Australia and further promote our reputation as one of the most welcoming environments for testing and developing connected and autonomous vehicle technologies.

Our autonomous mobility ecosystem is providing the opportunity to create new jobs to support this growing base and to attract new industry players

Cisco has made Adelaide its first Lighthouse City in the Southern Hemisphere with the Smart City Studio helping to identify and generate projects such as Smart Lighting, Smart Environment Monitoring and Smart Parking.

Adelaide is the first capital city in Australia to construct a transformational Gig City Network providing up to 10 gigabits to businesses in Adelaide's innovation precincts.

The focus on smart city technology, carbon neutral and renewable energy is driving the attraction of shuttle manufacturers to South Australia. Navya, a French driverless shuttle manufacturer plans to establish its Asia-Pacific manufacturing facility in Adelaide.

This builds upon UK based shuttle manufacturing company RDM Group, which has already opened its Asia Pacific headquarters and Australian subsidiary Aurrigo at the Tonsley Innovation Precinct.

South Australia's 'mobility ecosystem' continues to thrive with technologies for robotisation and automation; simulation, virtual reality and 3D mapping software; new energy storage technology; data analytics, cyber security, artificial intelligence and machine learning; communications systems and advanced sensor devices.

As customers have greater choice of transport and ever-increasing access to information, our focus will be on the next generation of integrated intelligent transport systems, the sharing economy and mobility as a service.

On-demand transportation services are already disrupting the market as are trials of autonomous shuttles, which are focussed on replacing traditional first and last mile transport. Autonomous transport has the potential to replace vehicle ownership models, the need for car parking and other infrastructure.

It is predicted by 2020 many known automobile manufacturers and new entrants will have vehicles with high levels of automation commercially available. With this, comes new opportunities. Not only in terms of the development of connected and automated vehicles, but also in terms of building an integrated ecosystem to support autonomous vehicles and intelligent transport systems and in connection with this, Smart Cities.

South Australia enjoys a unique opportunity at this time as a new technological age beckons and as a player in the global intelligent mobility market.

Future Mobility Lab Fund

South Australia continues to be a significant centre for autonomous vehicle technology and is leading a number of high profile pilots and initiatives which have state and national implications.

In 2016, the South Australian Government established a $10 million Future Mobility Lab Fund over three years, to provide funding support to projects that drive the development and deployment of connected and autonomous vehicle technologies.

The Future Mobility Lab Fund received a very strong response with 42 applications worth more than $26 million from the opening round. This shows the level of interest in this area and the potential it has to improve the way we move around our cities and build new industries.

Projects that have received funding will contribute to the states transport mobility ecosystem by providing valuable information and research on first mile and last mile transport and freight solutions, increase capability in identification and prediction of traffic and consumer patterns, build on connected autonomous vehicle positioning and sensor product expertise and increase innovation in vehicle safety testing and solutions for interaction with CAVs on our roads.

Connected autonomous vehicle and intelligent transport system technologies are already shaping the future transport industry. This includes the development of mobility as a service (Maas), ride sharing, truck platooning and optimisation of supply chains; to name a few.

South Australia is establishing itself as a test bed for innovation in transport. This test bed environment provides a place to trial new technologies as well as an ideal location for deploying commercial opportunities on our roads.

South Australia is building a reputation as a first mover in the evolving intelligent transport marketplace.

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Future Mobility Lab Projects

Flinders Autonomous Shuttle Trial

Flinders University will receive up to $1 million of Future Mobility Lab Funds for a five-year, three stage, $4 million driverless shuttle project - for which Flinders University and the RAA have partnered with industry supporters Cohda Wireless, Renewal SA, SAGE Automation, SIEMENS, Telstra, UPG, ZENEnergy and public transport operator Keolis Downer.

Navya's ARMA electric shuttle, which can carry up to 15 passengers, will propel the Flinders Autonomous Shuttle Trial (FAST) at the Tonsley Innovation Precinct. Initial trials will focus on putting driverless shuttles on to public roads within the Tonsley precinct and connecting them to bus stops on South Road and the Clovelly Park train station. A mobile app will enable people arriving by bus or train to Tonsley to book a shuttle to meet them and take them to any business destination within the Tonsley precinct. Future stages to extend to the Bedford Park campus and other local public transport hubs.

The vehicle will be docked within a six-bay solar re-charging garage, constructed near the Mitsubishi building on South Road, which will also be available for Flinders University staff, students and the public to recharge their electric vehicles for free, as part of an awareness campaign to promote carbon neutral transport options.

Flinders University will also utilise the trial to research the publics acceptance and response to driverless vehicles.

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Cohda Connected Autonomous Vehicle trials

Cohda Wireless, a global leader in autonomous V2X technology, will receive two grants totalling up to $2 million from the Future Mobility Lab Fund to conduct on-road trial projects on the streets of Adelaide to test how vehicles communicate to one another and with roadside infrastructure, as well as expanding Cohda's work in 'Vehicle to Everything' communications (V2X).

Cohda Wireless, is a leading supplier of Vehicle-to-Vehicle, Vehicle-to-Infrastructure and Vehicle-to-Pedestrian - collectively called V2X - Connected Vehicle solutions, is now developing CAV solutions for carmakers, smart cities and mining. Cohda Wireless' CAV products focus on solving key outstanding problems for CAV deployments: CAV localisation, CAV sensor fidelity, and CAV system cost.

Cohda Wireless will use these grants to test the company's new CAV applications on the streets and highways of Adelaide. Cohda will also deploy a network of its V2I road side units on the streets of Adelaide's CBD for testing CAV solutions as part of the trial. The grant will be used to acquire two autonomous vehicles capable of driverless operation in urban and highway environments.

Cohda's products are used widely in locations including the USA, Europe, Australia, Japan, Africa, Middle East, China, Singapore, Taiwan, and Korea.

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Future Mobility Lab Projects

Aurrigo Driverless Cargo Pod Trial

Aurrigo, the Australian branch of UK driverless shuttle supplier RDM Group will receive up to $1 million from the Future Mobility Lab fund to trial a driverless cargo pod, transporting goods at the Tonsley precinct, with the aim of developing a market-ready autonomous delivery pod within a year.

RDM is a manufacturer of autonomous vehicles and has supplied vehicles to

a £20 million UK Autodrive project to conduct trials near London. RDM through its subsidiary, Aurrigo plans to assemble driverless pods in Adelaide for the Asia Pacific region as well as provide local access to RDM's expertise in AV supply and fleet operations.

Aurrigo will utilise RDM's "Pod Zero", a four-person autonomous shuttle for the trial. Pod Zero is designed for short passenger or freight journeys, such as within industrial sites, residential communities or airports, its typical speed is 8 km/hour but it can reach 24km/hour.

The Pod Zero's Autonomous Control System (ACS) detects and avoids obstacles such as pedestrians, cyclists and stationary objects using sensors and on-board processing. The pod can

be booked through Bluetooth, using a mobile phone app, and its powered by a battery pack that can be replaced in 10 minutes and recharged in less than three hours.

The trial will enable businesses at Tonsley to test AVs as part of their local network or within their facilities and assist Aurrigo to develop other use cases for its Pod in South Australia, interstate and the region.

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University of Adelaide - CASR - AV Safety Testing

Source: Euro NCAP

The University of Adelaide's Centre for Automotive Safety Research (CASR), will receive up to $670,000 from the Future Mobility Lab Fund to build capabilities and a crash lab for testing of autonomous vehicle technologies for ANCAP and EuroCAP safety protocols.

The funds will enable the University of Adelaide to purchase specialised

equipment that will enable CASR to test the capabilities of autonomous technologies such as Autonomous Emergency Braking (AEB), collision avoidance technologies and lane support systems and ensue that they are operating safely and as expected in all conditions on Australian roads.

This testing will be vital to ensure that vehicles operate effectively in Australia's unique traffic conditions and safety criteria.

Once in place, CASR will be the leading Australasian New Car Assessment Program (ANCAP) testing facility in the region for CAV technologies.

The ANCAP testing will be recognised across Europe and will promote South

Australia to vehicle and technology manufacturers as a primary location for CAV development in Australasia.

By having this capability locally, it will provide South Australia as a leader in vehicle safety and innovation, particularly within the rapidly emerging area of CAV technologies and will contribute to the leadership position South Australia has taken in CAV technologies.

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Future Mobility Lab Projects

Telstra Connected Transport Solutions – Connecting Vehicles to Everything

Telstra and Cohda Wireless have successfully tested Vehicle-to-Pedestrian (V2P) technology over the 4G mobile network in Adelaide, showcasing an Australian-first by sending standardised intelligent transport systems messages over the 4G network to enable interaction of vehicles with smartphone-equipped bicycles & pedestrians.

The trial demonstrated vehicles interacting directly with pedestrians' and cyclists' mobile phones to improve safety on the road network.

The technology was tested using common scenarios, such as a car and a cyclist approaching a blind corner, a car reversing out of a driveway, and a car approaching a pedestrian. The tests have shown that safety between vehicles and vulnerable road users can be improved simply by broadcasting safety signals from smartphone technology leveraging the current 4G cellular network.

Telstra and Cohda will also be demonstrating cellular – Vehicle – to- Infrastructure (V2I) technology in the near future, a pivotal first step in developing Vehicle-to-everything (V2X) technology. Applications for the technology will be utilising integration into the SCATS traffic control network. (Traffic Lights) demonstrating green light priority to high priority vehicles, testing optimal green light timing where the vehicle is informed of the optimal speed to approach a traffic light so that that they get a green light when they arrive, therefore allowing a more continuous flow of traffic.

The use and development of V2X communications will enable the creation of intelligent transport systems that may allow more efficient use of road infrastructure, better traffic management (reduced congestion) and, in the future, coordinated and safe autonomous vehicle operation.

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SAGE Automation

SAGE Automation will receive two grants to extend the capability of Addinsight, the traffic intelligence system developed by South Australian Department of Planning, Transport and Infrastructure. As preferred partner, SAGE engineers, manufactures and integrates connective data solutions for Addinsight. It has already developed numerous product variations that help road authorities implement and harness the Addinsight System to its fullest capability.

In the first grant SAGE will test new technology that enables individual passenger detection rather than just vehicle detection, which will allow the system to be used in passenger only environments such as public transport stops. In the second grant, SAGE will work with SA-based satellite communications company Myriota to test mobile variable message sign (VMS) tracking. The trial will use satellite technology to track the location and status of the VMS in remote areas with no 3G signal.

 As Australia's leading integrator of intelligent transport systems SAGE helps improve end-user experience, reduce life cycle costs, lessen environmental impact and prepare transport systems for future technologies. SAGE is supporting multiple autonomous vehicle trials and has established a number of collaborative partnerships.

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