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THE WAR FOR START-UPS

WHICH STATE WILL BE AUSTRALIA'S **START-UP CAPITAL**?

DIGITAL TRANSFORMATION IN AUSTRALIA'S SMART CITIES

Trends *in Round One projects of the* Smart Cities *and* Suburbs Program

BY HARI KOTROTSIOS, AUSTRALIAN SMART COMMUNITIES ASSOCIATION

Traffic and bin sensors, electric-car charging systems, drones, 3D city modelling, renewable energy generation and LED public lighting are among the exciting technologies – across a total of 49 smart city projects – that have received funding under Round One of the Australian Government's Smart Cities and Suburbs Program.

These innovative solutions reflect the increasing momentum of digital transformation facing Australia's cities and regions, and the resulting need to provide cheaper, better and more intuitive real-time services for everyone.

In April 2016, the government released its Smart Cities Plan, which sets out its vision for productive, accessible and livable cities that attract talent, encourage innovation and create job growth. The $50 million Smart Cities and Suburbs Program is being delivered through the Australian Government's Smart Cities Plan, and supports projects that apply innovative smart technology solutions to urban problems.

Under Round One of the program, announced last year, 49 projects received a total of $27.7 million in Australian Government funding, 40 per cent of which are in regional areas.

Last year's funding recipients range from smaller, focused projects, such as mobile apps, traffic counters and wi-fi points, to broader, city-wide Internet of Things (IoT) infrastructure projects, such as those in Newcastle and Darwin.

'Whether big or small projects, what we'd like to see are the lessons learnt and findings that can be shared and re-used from each of these projects,' says Australian Smart Communities Association Treasurer Matt Schultz.

'It's important that the solutions being implemented are opened up for collaborative assessment to help all of our communities across Australia.'

The current focus for these projects is about putting in place initial precinct-level smart technologies that enhance people's experience of a particular area, whether it's a city precinct, a central business district, or a street where smart technologies

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and connected infrastructure are being rolled out for the first time.

'Imagine, for example, if information about on-time or delayed buses, trains, Ubers or other forms of private transport was available for you to select in real-time,' says Schultz.

'Cities and communities can't do any of that without all the underlying investment in infrastructure and technology in the urban environment.

'The value proposition of smart cities is the concept of embedding connected and interoperable infrastructure and systems where different elements of the city that have never been able to talk to each other before can start talking to each other.'

First steps towards smarter communities

While only a handful of Australian communities are proactively implementing scalable solutions in the smart-city space, the Smart Cities and Suburbs Program is broadening the opportunity for more regions to start taking their first steps on this journey.

Schultz says that Australia is still in its infancy in the smart-city vision of a connected community that can benefit everyone through the use of data technology.

Australia has a long way to go, but co-investment in these smart-city projects is providing more opportunities and massive

benefits for an increasing number of people living in different areas across Australia.

'Smaller regions need to start somewhere, such as free public wi-fi, smart kiosks, or parking apps,' Schultz says. 'The challenge is to ensure that what is implemented has the optimal chance of long-term use and sustainability.

'For example, does the wi-fi support connections with other smart infrastructure, [rather than] just providing free internet? Does the free wi-fi data provide analytics that can be shared with other systems, and delivered to the public via open data? That's where the challenge to really drive the full value of this investment comes in.'

Schultz says it's the combination of all of these underlying smart technologies and solutions that will provide the most benefit to people in smaller communities.

Each city and community, however, is on a unique journey to build smart-city capability and capacity, which is driven by region-specific demographics, urban areas and consumer demand.

'No city can become a smart city overnight. This is a journey where councils are rolling out new technologies in a way that [allows us to] integrate and understand in real time what's happening in a community to make better decisions, be more efficient, and open more opportunities for better services based on people's expectations of the area they live in,' says Schultz.

'We live in a real-time era where people expect intuitive, customised and personalised services. This is what they're expecting, because of the technology they have already been exposed to.'

Partnerships are critical to the smart agenda

The Australian Government's injection of funds through its Smart Cities and Suburbs Program will allow more cities and regions to begin their smart-city journeys – to access and implement some of these smart solutions and technologies for their communities.

Schultz believes that it is vital that the government continues to support communities through funding, as well as legislation and standards, to sustain the drive towards smarter communities.

Other critical partnerships include state governments, universities, business and industry to help develop, implement and roll out these innovative smart technologies.

'Ideally, [the best option for smart cities would be] the public-private partnership (PPP) model between all of these sectors, [allowing them] to work together consistently and collaboratively in an ongoing way to co-design and co-create these smart cities. It's an area where we fall behind Europe and North America,' Schultz says.

He says that more practical guidance

is required around solutions, advice, standards and support to implement solutions that will truly become open and interoperable, and to work with existing systems and infrastructure to achieve the full benefits of smart communities.

'Many of the regulations and legislation in areas such as energy, water, sewerage, land-use planning and development need to be updated to help roll out these initiatives and move the smart-city agenda forward. They need to be modernised to take into account new solutions to urban living.'

Smart solutions for urban challenges

As the 49 projects from Round One roll out, the Australian Government is reviewing applications for Round Two funding for projects that apply innovative technology solutions to urban challenges, delivering economic, social and environmental benefits. Priority areas include:

- smart infrastructure, such as traffic management, emergency response, waste management, communications and water supply

- smart precinct solutions, such as integrated and intelligent systems that provide automated responses to real-time environmental and usage data

- smart services and communities that deliver community-focused local government services

- smart planning and design; for example, automatic integration of data from sensor networks, planning systems that predict development impacts, and planning tools that analyse data.

Claire Howlett, General Manager at the Department of Infrastructure, Regional Development and Cities, says that Round Two supports local government projects that partner with industry, research and private-sector organisations, as well as other local governments.

'We're interested in looking at collaboration between local governments, as that's where you start to get big advancements, including sharing knowledge and experience,' Howlett says.

Howlett told delegates at the Australian Smart Communities Conference in May that the use of smart technology is playing an increasingly important role in improving the functioning of Australia's cities and regions, making them more productive and livable places.

'We are excited by the level of interest and investment that's being catalysed through this program, and the breadth of innovative projects being implemented in our cities and regions,' she says.

'Government funding was matched by almost $36 million in partner contributions, or around $1.30 for every Australian Government dollar.'

Another $22 million was available in Round Two, which closed on 2 July. Successful recipients are expected to be announced in early December 2018. Forge.

Round One project examples

3D modelling and virtual reality projects

Smart Transport, by Macquarie Park (New South Wales), will deliver 3D city modelling using population mobility data derived from mobile phone towers, as well as data on other variables such as education and energy, transport and land use. This modelling will provide information on how sectors of the population interact with the city, facilitating evidence-based decision-making for future investments and planning.
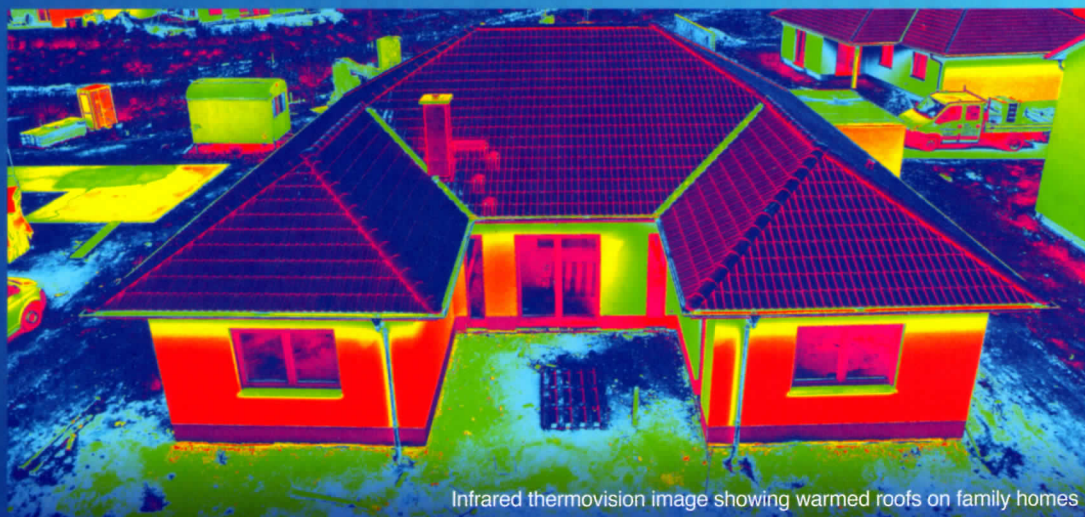
3D City Planning of Moreland Council, by Moreland City Council (Victoria), will use smart data-capture technologies to generate a 3D model of the Moreland City Council area. Tools like virtual reality and augmented reality will be used to create visualisations of major council infrastructure projects, benefiting the community and council by increasing the opportunity for community consultation in investment decisions.

'What's exciting about these virtual-reality and 3D modelling projects is how they can completely change the way the community can access the development approval process,' says Howlett.

'Instead of wading through mountains of documentation, people can visualise what a development will look like in their

Infrared thermovision image showing warmed roofs on family homes

existing landscape. That's game-changing in terms of the genuine engagement of the community in the consultation process, and potentially streamlining and greater efficiencies for businesses in making these developments.'

Real-time data collection projects

Energy Efficient Housing, South East Perth, by City of Gosnells (Western Australia), will use wi-fi temperature loggers and infra-red drone images to collect data on the effect of roof colour on home temperature, and display this data on a smart sign at the front of new housing estates in outer metropolitan Perth. Signs will also direct viewers to an online platform with ideas for sustainable home design and green building, to encourage new homebuyers and builders to implement light-coloured roofing.

'This project will collect real-time evidence of the impact of different coloured roofs, and has the potential to change the conversation around how people choose the colour of their roof. It can deliver huge energy efficiency gains,' says Howlett.

Smart Cities, Smart Liverpool, Smart Pedestrians, by Liverpool City Council (New South Wales), will use smartphone detection technology for real-time measurement of pedestrian and car movements. This data will benefit the community by enabling council to make informed decisions about transport and urban planning, effectively accommodating population growth impacts on mobility.

'Patterns in movement and congestion will be identified, and will help inform decisions around improving street design, footpath layout and traffic management,' says Howlett. 'Areas where traffic congestion and safety can be improved will be identified, leading to increased lighting and security.

'The project will demonstrate how real-time data can assist in designing people-friendly streets, and has the potential to be scaled up and rolled out to other cities.'

City-scale infrastructure projects

Smart Move Newcastle: Intelligent Mobility, Energy and Data, by Newcastle City Council (New South Wales), will deliver a transport, energy and digital infrastructure network, including laser-enabled roadside poles, solar- and battery-powered electric-vehicle charge points, smart bus stops and smart parking. In April 2018, Council began the rollout of its Long Range Wide Area Network (LoRaWAN) to provide low-cost, low-power connectivity for millions of wireless sensors and data-collecting devices. In May, Council made 100 bikes available for hire at 19 electric-bike charging stations across the city.

Switching on Darwin, by City of Darwin (Northern Territory), will implement smart infrastructure, including smart services – lighting, parking and wi-fi – which will be integrated through an open IoT platform. Smart technology will contribute to city rejuvenation, and, together with open data, will help to stimulate new partnerships and business growth, creating new job opportunities and helping to combat social and safety challenges. Works on lighting upgrades began in July 2018, and tenders have been released for expansion of the free wi-fi network. Forge.