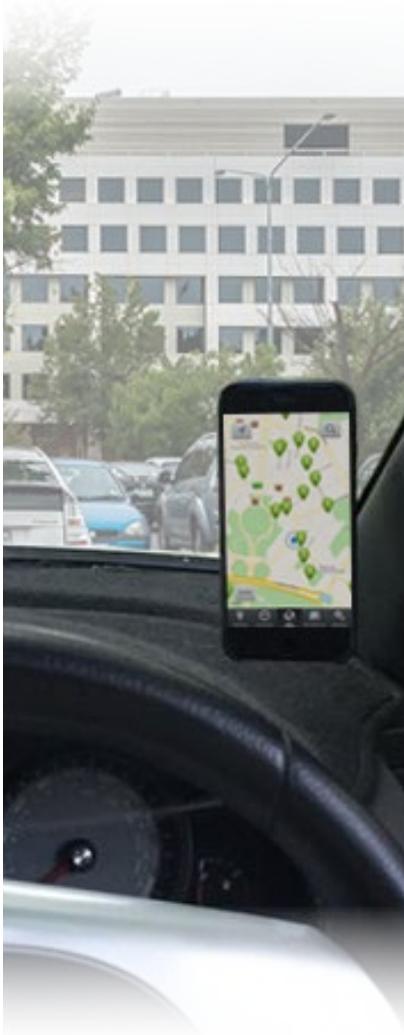


ACT Government
*Smart Parking – transforming
parking in the ACT*
Discussion Paper



February 2015

Chief Minister, Treasury and Economic Development Directorate
Policy and Cabinet Division, Government Reform Branch
Smart City Team smartcity@act.gov.au

Contents

Introduction	1
Context for Smart Parking.....	1
Purpose of this document.....	1
Proposed trial	1
Background	2
Digital Canberra Action Plan	2
ACT Government parking policy.....	2
Potential benefits of Smart Parking	4
Smart Parking technology	5
Traffic management.....	5
Smart Parking across the world	6
Case Study 1 – Smart Parking in Westminster Council, London.....	6
Case Study 3 – City of Perth Parking App.....	7
Case Study 4 – In-ground sensors at Cottesloe Council, Perth	7
Case study 5 – In-ground sensors and ticketless parking at Lane Cove, Sydney	7
Case study 6 – In-ground sensors and open data in Melbourne.....	7
Parking innovation in Canberra	8
Smart Parking trial	9

Introduction

Context for Smart Parking

The Canberra public and businesses have expressed a desire for the ACT Government to consider innovative approaches to parking.

Other cities in Australia and across the world are using digital tools to improve their parking system. Canberra can draw upon the positive results of other cities to deliver a better user experience for its citizens.

In particular, we are interested in technology such as sensors that can provide real time information on parking availability. This type of technology will build upon the CBRfree Wi-Fi network being rolled out by Digital Canberra across 12 coverage areas ([CBRfree WiFi](#)).

Purpose of this document

The purpose of this document is to inform the public about the ACT Government's plans to use a trial of new parking technologies to respond to their feedback. We will consult with the local community and businesses during the trial. We are also interested in hearing from industry and from entrepreneurs about new or innovative solutions.

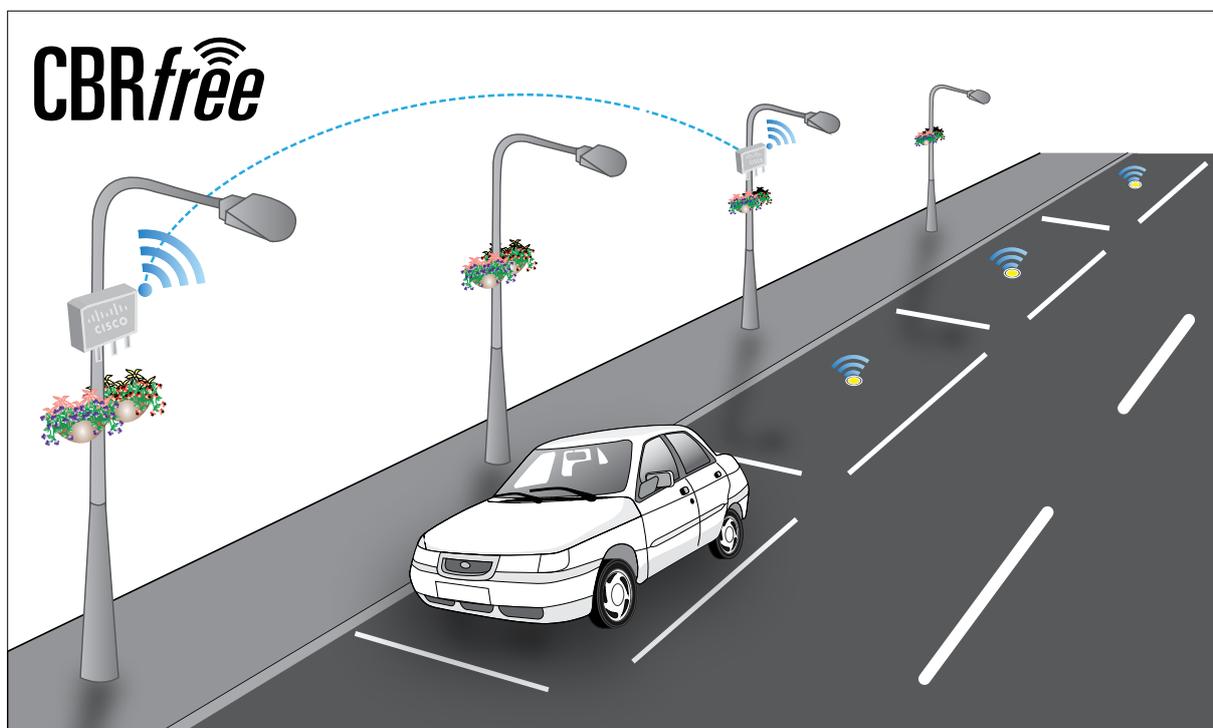
What is smart parking

Smart Parking provides real time information on parking that allows smart phone apps and traffic signs to guide you to an available parking space. Smart Parking will provide information before departure on the exact level of parking available in the destination area and the best route. Traffic signs will point the way towards available parking spaces and show the number of available spaces.

Smart Parking has the potential to save people time and reduce traffic congestion caused by people cruising for a park. We are interested in promoting greater convenience for the public through innovative payment methods such as the use of smartphones for payment and moving beyond displaying a parking ticket – 'pay and display'.

Proposed trial

In the second half of 2015, we will undertake a trial in a limited area of Canberra. During the trial, we will consult with the local community and businesses on how we can best use Smart Parking to provide a positive experience in the area.



Potential Smart Parking technology – sensors and WiFi

Background

Digital Canberra Action Plan

In the second half of 2013, the ACT Government purchased new parking machines that would allow payment by credit card. The public supported the new machines and also asked the Government to consider more innovative parking systems over the longer term.

In 2013, the Government also developed the *Digital Canberra Action Plan 2014-18*. The Action Plan outlined five priority areas, which included the introduction of a technologically smarter city

through the provision of more digital services to the community. The development of this strategy involved seeking views from the public and businesses about opportunities to introduce digital technologies. During this consultation, the public expressed a desire for digital parking technologies.

ACT Government parking policy

Transport for Canberra is the transport policy framework for the ACT Government.

Transport for Canberra describes how traffic congestion is a challenge for the ACT. It indicates that the social costs of traffic congestion includes the loss of private time, business time, vehicle operating costs, air pollution and greenhouse gas emissions. Smart Parking has the potential to address these social costs and improve the ACT's transportation system.

Parking in areas of Canberra such as Civic is characterised by high occupancy in some locations and underutilisation in nearby parking areas. This is because there is no way for Canberrans to be aware of parking availability apart from cruising around or knowledge of the area. This problem contributes to traffic congestion.

Businesses are also affected by parking availability. Retail businesses, in particular, need to make sure that their customers have access to nearby short term parking.

Canberra's parking system is based on a pay and display model, where the motorist purchases a printed ticket at a parking machine and places the ticket in the windshield of their vehicle. Under this approach, motorists need to estimate how long they will require. If they take too long, they will need to return to their vehicle or run the risk of a parking



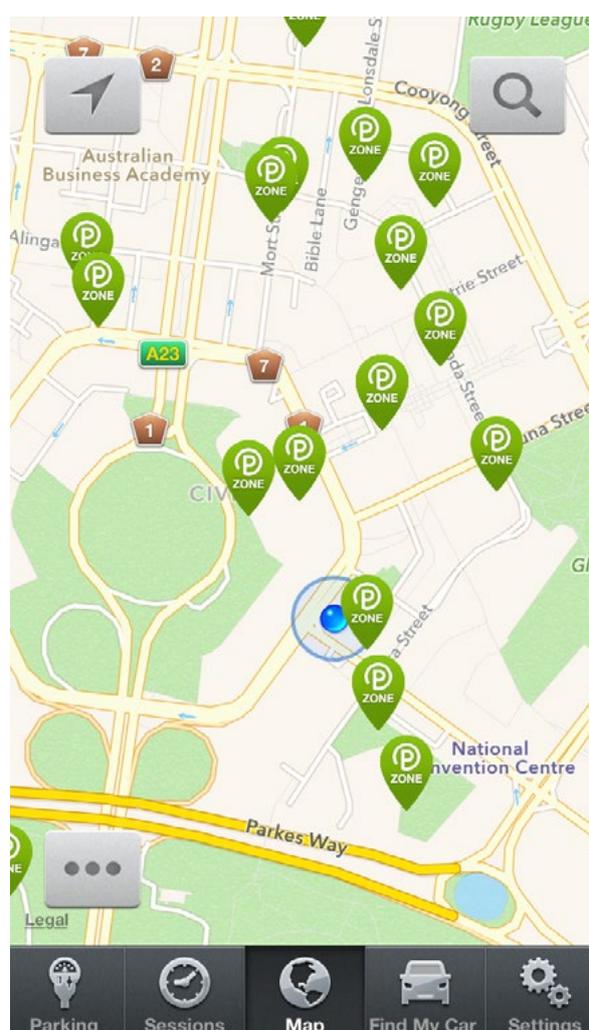
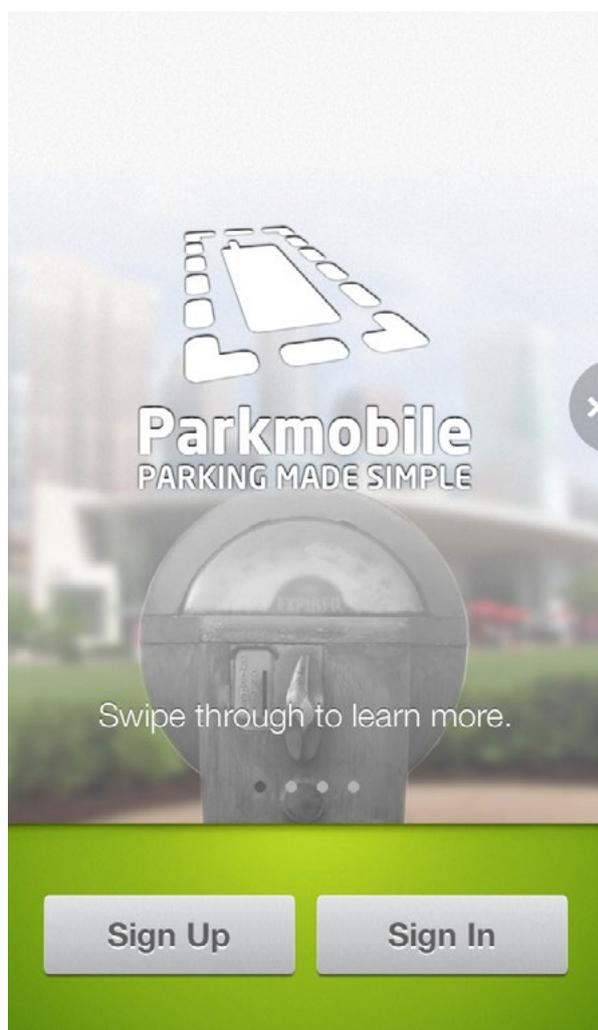
Woman pays for parking using credit card.

fine. Parking enforcement officers need to inspect the parking ticket displayed in each vehicle. Where someone is parked in a time limited zone, enforcement officers need to chalk the tire of a vehicle and then return at a later time. This parking administrative approach is resource intensive.

As part of the new parking machine installation, the ACT Government introduced a pay by phone option provided by the ParkMobile app. The payment method, after some legislative changes, removed the requirement for users of the app to purchase and display a ticket. Initial technical problems with the application introduced some parking enforcement errors. However, parking operations staff successfully worked

with ParkMobile to resolve these problems. As a result, the public have responded positively to paying with their smart phone and being able to remotely top up their parking stay as required.

In July 2014, Canberrans used ParkMobile for 2 per cent of parking transactions. By December 2014, ParkMobile was used for over 6 per cent of parking transactions. This rate of use is already significantly higher than any other jurisdiction in Australia.



Screen shots of the Park Mobile app showing areas in the Canberra CBD where the app can be used to pay for parking.

Potential benefits of Smart Parking

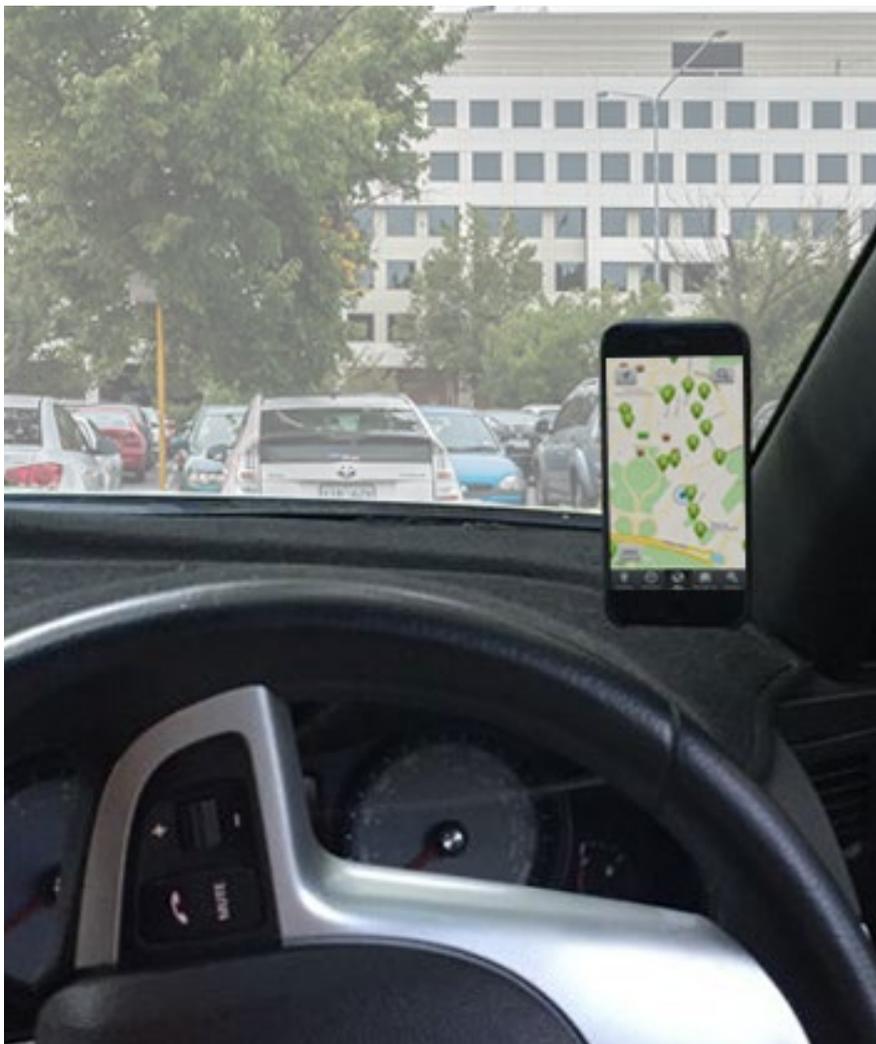
Smart Parking has the potential to save people time, reduce traffic congestion, allow better management of parking supply, provide benefits to businesses; and increase enforcement efficiency.

- A trial of Smart Parking in San Francisco found that Smart Parking reduced the amount of time spent searching for a space by 43 per cent.
- By guiding people to a parking space more quickly, Smart Parking would reduce traffic congestion. The city of Nice has concluded that Smart Parking has reduced congestion by 10 per cent (a case study is available in the section below for additional information).

- International studies have suggested that, on average, around 30 per cent of cars in congested downtown traffic are cruising for parking (noting that the level of congestion may not be as high in Canberra).
- By providing real time information on occupancy, Smart Parking technology will highlight areas of high parking demand and improve the Government’s ability to manage parking supply.
- By making it easier to find a parking space, Smart Parking would make it easier for businesses to attract customers.
- Smart Parking would provide the ACT

Government’s parking managers and users with real time information on any overstays. This would significantly increase enforcement efficiency, which would lead to higher levels of parking compliance from the public.

A trial of Smart Parking will provide the government with an opportunity to evaluate these benefits.



Smart phone app guides a motorist to a free parking space.

Smart Parking technology

The parking environment can be separated into enclosed areas such as off-street surface car parks and multi-story structures, and open areas such as on-street parking spaces. The technology required to introduce Smart Parking is different for enclosed and open areas.

For enclosed car parks, it is possible to implement a system at the entrance and exit that can count the number of cars entering and leaving the car park – providing an accurate measure of occupancy at any moment in time.

For on-street parking spaces, sensors would need to be implemented to capture occupancy data. These sensors could be installed into the bitumen surface of the parking space and use an infrared beam or radar to detect a car above, or could be installed at the curb side at around knee height.

Private sector apps would guide people to an available space. Installation of traffic signs at key intersections would also inform motorists of available parking and guide motorists towards areas with parking availability. This will ensure that people without smart phones could be guided to an available space.

Traffic management

Ultimately, we envisage that Smart Parking will form a part of an overall approach to traffic management. We would like to introduce a system that can advise motorists of the best route to their destination that includes optional parking availability. A fully developed traffic management system would improve traffic flows and reduce congestion.

While this is a longer term ambition, it is worthwhile to highlight the broader potential presented by intelligent systems such as Smart Parking.



A wifi box in the City centre.

Smart Parking across the world

In recent years, a wide range of international cities such as Barcelona, San Francisco, London, Nice (and many more) have introduced new technologies and systems for parking. In these cities, Smart Parking has been implemented by a combination of sensors embedded in the ground (or at the curbside) to capture defined on-street parking spaces (ie spaces separated by lines) and video cameras for undefined on-street spaces and restricted parking locations. For off-street parking lots or multi-story structures, loop sensors installed at the entrance and exit capture availability data.

We have provided a number of case studies for Smart Parking in this paper. However, there are many more examples available.

Case Study 1 – Smart Parking in Westminster Council, London

Following a successful pilot, in early 2014 Westminster Council installed 3,000 in-ground sensors across the West End of London. The council has indicated that motorists spend up to 15 minutes searching for a parking space, and they expect that Smart Parking will save people time. A further 7,000 sensors are scheduled to be rolled out. Westminster council has also indicated that they are looking into the possibility of creating a cashless parking scheme. The sensors that they have installed have the ability to detect radio frequency identification (RFID) chips. In the future, motorists may be able to park and walk away – automatically paying for parking however long they stay.

Case Study 2 – Smart Parking in Nice, France

Following a successful trial in 2012, in 2013 the city of Nice, France, commenced installing Smart Parking across 8,500 on-street spaces and 19 multi-story parking structures. Interestingly, Nice has a population of around 350,000 people, which is comparable to the ACT's population.

Nice has publically indicated that the introduction of Smart Parking has:

- reduced operational parking costs by 30 per cent;
- provided a 24 month return on investment; and
- reduced congestion and pollution by 10 per cent.

Parking and technology experts have suggested that Nice is the best example of the introduction of Smart Parking to date. This is because Nice has implemented a citizen centric solution that goes beyond parking to capture traffic flows and sound and air pollution. The Nice Mov'Smart app is able to propose the best overall route to take to an available parking space.

Nice also installed 570 multi-service kiosks across the city that lets the public pay for parking and access transport services such as bicycle and electric car sharing services. The kiosk also includes a Close2mee service which provides retail and general information and allows citizens to inform the city of potential problems.

Nice uses the information on parking occupancy, traffic and environmental quality provided by their integrated solution to adjust parking fees.

Parking technology in Australia

New parking technologies and systems have also been introduced into Australia. However, to date, there has not been an Australian city that has implemented a full Smart Parking solution (as demonstrated by the city of Nice). The following case studies describe how a range of Australian cities are using in-ground sensors, apps, smart phone payment, intelligent traffic signs and open data to transform parking.

Case Study 3 – City of Perth Parking App

Perth has developed the City of Perth Parking App. This app allows the user to view exactly how many bays are available, in real time, across 12 of Perth's multi-story parking structures in their central business district.

The app allows its user to locate car parks closest to their destination and then advises the best route. This route advice even takes into account roadworks, which allows Perth commuters to avoid areas of blocked up traffic. The app also sets a parking reminder for when their parking is due to expire.

The app was the first of its kind in Australia when it was introduced in 2012 and has received recognition for its effective design. In 2013, the app received an award from the International Parking Institute and a Design100 Australia Mobile App award. The app also has an average rating of more than 4 out of 5 on the Apple app store.

Case Study 4 – In-ground sensors at Cottesloe Council, Perth

Cottesloe is a small council covering some of the busiest beaches in Perth, and there is more demand for parking than parking spaces.

Cottesloe has installed in-ground sensors in the majority of its time limited parking spaces. The sensors provide real time information to parking management on infringements. The introduction of the sensors has led to greater enforcement efficiency, which has caused improved parking compliance from the public.

Information on occupancy levels also allows Cottesloe to prioritise the busiest areas of parking. This has improved access to parking and ensured that there is a strong link between enforcement and fairness. Accurate information

on occupancy has also allowed Cottesloe to make better decisions around parking supply.

Case study 5 – In-ground sensors and ticketless parking at Lane Cove, Sydney

Lane Cove installed in-ground sensors in 2011. Similar to Cottesloe, the sensors provide real time information to parking management. This is used to provide information on availability to intelligent traffic signs, to assist with understanding traffic flows and to assess overstays.

Lane Cove has also introduced a ticketless parking system to one of its key multi-story car park – Lane Cove Market Square. At this car park, a vehicle's registration is photographed and the time of entry is recorded. For visitors who have stayed within the three hour free period, the boom gate at the exit will automatically open. For visitors who have stayed for longer than three hours, they will need to pay for the extra time.

Case study 6 – In-ground sensors and open data in Melbourne

Starting in 2011, Melbourne has installed parking sensors in 4,600 parking spaces. The data provided by the sensors has improved Melbourne's operational efficiency and management of parking supply. Melbourne has also introduced a smartphone payment app, and since early 2014, has started to reduce the number of their parking machines in favour of this new payment system.

Melbourne has also developed an open data platform, where the city makes a wide range of government data openly available. Melbourne has indicated that the objectives of the open data program are to increase transparency, improve public services and support new economic and social initiatives.

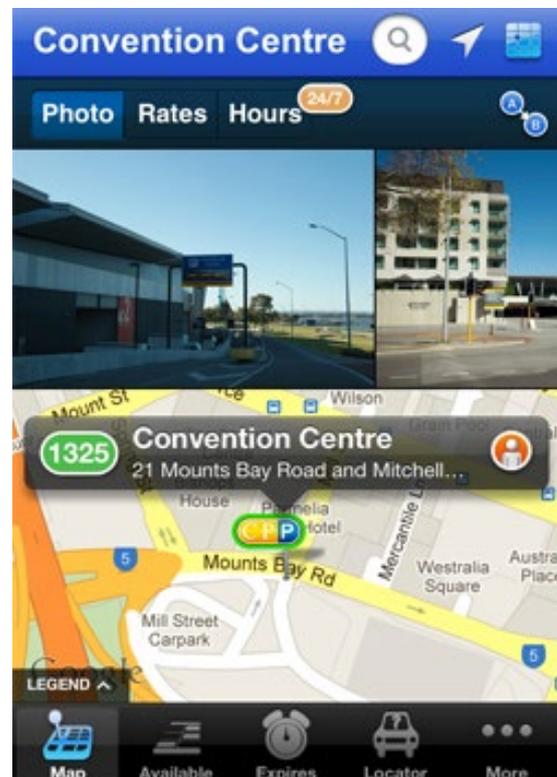
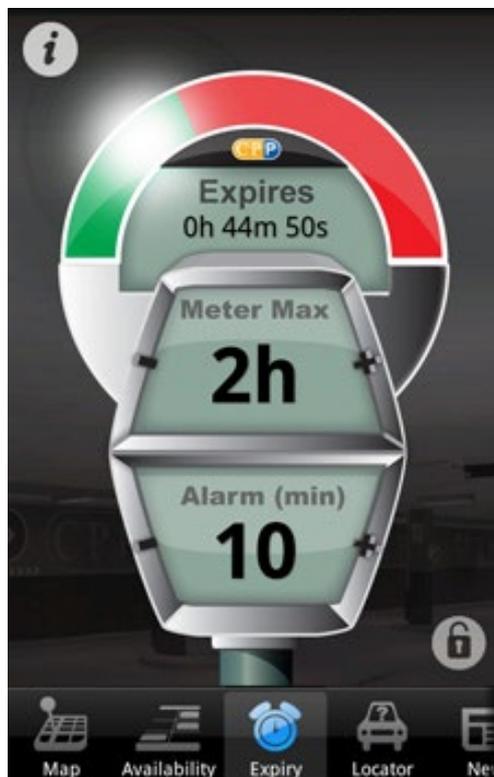
Melbourne has made their entire parking data set collected by their in-ground sensors publically available at their open data website, www.data.melbourne.vic.gov.au.

Private companies are also providing useful innovative products. For example, the parking company Secure Parking provides its customers with the ability to book a parking spot.

Parking innovation in Canberra

Closer to home, the Canberra Centre has intelligent traffic signs informing motorists of parking availability. It is able to quickly guide people to the right floor of the car park and to an available space. Westfield Belconnen and the Canberra Airport use sensors to display real time parking spot numbers on signs, combined with above the spot red-green lights to guide people to where there are available parking spaces.

The University of Canberra has also introduced signs located at the entrances to the campus indicating in real time the number of free parks available in the multiple car parks on the campus. The Australia National University has also introduced 'closed loop' technology at the entrance of its parking structures that can provide information on occupancy.



Screen shots from the City of Perth Parking app

Smart Parking trial

We are aware of the Smart Parking technology and systems that have been implemented in other cities. However, we are interested in hearing from industry and entrepreneurs about new or innovative solutions, and are open to trialling a mixture of different technologies before committing to any particular solution.

- The core focus is about the user experience and ability to find an available car park space in real time.

The proposed trial of Smart Parking will be in a limited geographical region, such as a precinct of a town or city centre or an inner city shopping district such as Manuka. The trial will test the technology and evaluate the impacts of Smart Parking on time spent searching for a parking space and traffic congestion.

During the trial, we will consult with the local community and businesses on how we can best use the Smart Parking technology to provide a positive experience to the local area. We consider that the following parking options are interesting and worth exploring through the trial.

- The use of Smart Parking apps to promote local retail businesses and events.
- Demand responsive pricing. The Government could adjust prices according to the demand for parking, eg lower prices in off-peak.
- More flexible approach to enforcement. For example, we could introduce a grace period for people who have overstayed by only a small amount.

We will consult with industry in early 2015 with a view to commencing a trial in late 2015. We will then conduct a robust evaluation of the impacts of Smart Parking and consider the lessons learnt from the trial.



Aerial view of Canberra.



ACT
Government