

# SMART PLACES STRATEGY

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Using technology and data driven solutions to improve the quality of life for communities across NSW.





## Minister's Foreword



Digital transformation is not simply embracing new technology but about a change in thought and the way we innovate. Our vision for NSW is built on a commitment to world-class modern infrastructure, smart communities and technological innovation to improve the quality of life for communities across NSW.

Smart Places bring the physical and digital together, meaning citizens, businesses, partners and the public service workforce can go Beyond Digital from local streets and suburbs in our regional and metropolitan areas as well as our cities.

Our Strategy aligns with related initiatives from the Australian Government, local councils throughout NSW, as well as delivery partners in the private sector. Together, we will take a place-based approach to smart cities and connected infrastructure and services and realise the real value of smart places and interconnected systems.

## Vision

*Delivering outcomes for citizens and businesses by applying a consistent, seamless, place-based approach to Smart Places implementation in NSW.*

## What are Smart Places?

Smart Places are where the physical and digital environments converge. They integrate technologies into the built environment to capture and convey data and insights.

The embedded technology helps to capture information on the asset or local environment. The data is analysed to help people and governments to make better, evidence-based decisions about how to improve the productivity, liveability and resilience of cities, towns and communities.

**1**



**Embedding sensors** and communications technology in infrastructure

**2**



**Capturing**, safely storing and making government-acquired data available

**3**



**Communicating information** and insights

## Why we need a Smart Places Strategy

Building on Government's long term planning frameworks, the Smart Places Strategy will enhance existing economic and technological strategies by streamlining policy and plans across all levels of Government in NSW.

The NSW Government will play an important role in ensuring its customers realise the full benefits Smart Places have to offer. This includes:

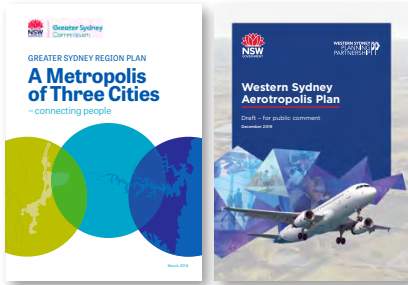
- » setting legislation, policies and guidelines for place owners, industry and government agencies to consistently rollout smart initiatives;
- » creating partnership structures and governance models across local, state and commonwealth governments and the private sector to maximise investment in smart initiatives; and
- » direct investment to support market acceleration and to address market failure so that no one is left behind.

The Smart Places Strategy aligns with, and brings together the outcomes sought within the NSW Government’s metropolitan and regional infrastructure, economic, land use and digital strategies. This helps achieve their overall liveability objectives in regional and metropolitan places.

**NSW Government Strategies**



**NSW Government Metropolitan land use plans**



**NSW Government Regional Plans**



**How Smart Places will be delivered**

The Smart Places Strategy responds to Recommendation 30 of *Building Momentum: 2018 State Infrastructure Strategy*, which recognises that successfully delivering Smart Places requires robust **foundations**, effective **enablers** and innovative **programs**. Using these three ‘building blocks’, the Strategy informs decisions and actions by the NSW Government and empowers place owners across the State to implement ‘smart’ solutions for problems in their cities, towns and communities.

The Strategy also positions the NSW Government to work collaboratively with local government, the Australian Government and private sector partners to harness the power of digital technologies and realise the substantial benefits being delivered by technological change.



## Smart Places have the customer at the centre

The NSW Government is ensuring Smart Places are designed to deliver outcomes to benefit our citizens, businesses, employees and partners. The outcomes span six key areas and were developed using insights from our engagement with communities across regional and metropolitan NSW. These outcomes will be used to assess the performance of future smart initiatives developed by the NSW Government and our partners.





## Skills, Jobs and Development

**Smart Places grow knowledge capital of people and businesses in NSW to benefit from the transition of the global economy.**

### Measurable benefits for our communities

Fast, reliable and dedicated communications networks are essential components of a Smart City and drive economic growth. The Ten Gigabit Adelaide project is delivering a 10Gbps fibre optic network – among the fastest internet connectivity speeds in the world – to 1,000 buildings throughout the Adelaide CBD and along the main commercial strips in North Adelaide. The project will:

- » provide the fundamental infrastructure needed to deliver a range of smart city projects and services.
- » create up to 2,500 new jobs in the first six years by helping retain and attract new businesses, entrepreneurs, government and institutions.
- » generate up to \$76 million in economic benefits per annum.

### Achieving this outcome

Smart Places initiatives being developed by the NSW Government and partners should:

- » Provide open data to generate new insights and opportunities for businesses and government to innovate in the delivery of services and infrastructure.
- » Use data and smart solutions to improve efficiency in the design, approvals, delivery, maintenance and decommissioning of assets and places.
- » Increase digital literacy and capability of customers to improve their access to economic opportunities.
- » Invest in human capital across NSW Government and Councils to help deliver Smart Places and solutions.
- » Strengthen a culture of trialing new approaches, technologies and procurement methods.
- » Leverage and multiply economic opportunities in key strategic places in our cities and regional centres through investment in smart places.

### Where this is already being done

Transport for NSW's *Future Transport Digital Accelerator* connects customers and NSW Government with industry, researchers, entrepreneurs and start-ups in the digital space. The Accelerator uses a human-centred design approach to gather research, develop crucial insights and deliver products and services to market by partnering and co-designing with the technology and innovation sector. This increases Government's capabilities and ensures better, more customer-centric outcomes.

The NSW Government is developing the Sydney Innovation and Technology Precinct - a place where ambitious startups, world-class universities and research institutions, high-tech giants and the community collaborate to solve problems, socialise and spark ideas that change our world.

This globally connected precinct, expected to generate 25,000 jobs, will be underpinned by high-quality physical and digital infrastructure, attracting the brightest and the best to Sydney, establishing an ambitious benchmark for generations to come.



## Safety and Security

**Smart Places provide safer places for our people and increase our sense of security.**

### Measurable benefits for our communities

Smart CCTV, smart lighting, speakers, predictive analytics and 'push to talk' emergency systems can help make public spaces safer and reduce crime. Broken Hill City Council aims to see a 20% reduction in crime following the installation of smart safety technology. The Smart Western City Program Strategic Business Case predicts a 26% reduction in non-domestic related assaults as a result of the deployment of these types of smart solutions.

### Achieving this outcome

Smart Places initiatives being developed by the NSW Government and partners should:

- » Ensure data from customers and places is collected and used to maintain both value, privacy and security.
- » Increase people's sense of safety, so they can fully participate in the social and economic activities at all times of day.
- » Increase the social resilience of customers and communities that use Smart Places.
- » Increase the safety and security of customers moving to, from and within Smart Places.
- » Increase the resilience of physical and digital assets to natural and human threats.
- » Increase the security of physical and digital infrastructure in Smart Places from cyber attacks.

### Where this is already being done

The Smart Places Strategy commits the NSW Government to developing a *Data Protection Policy* and a *Customer Charter for Smart Places* (refer page 15). These are critical foundations for the success of Smart Places and will guide how data from Smart Places is collected, managed and stored.

The NSW Telco Authority is rolling out the *Critical Communication and Enhancement Program*, an upgrade to the Government's Radio Network. The program involves integrating the separate radio networks for first responders and essential service agencies into one shared network more easily communicate information (interoperability) and coordinate responses during critical incidents. The program also increases the coverage of the network with new telecommunication infrastructure in our regional and metropolitan areas. This increases the safety, security and resilience of our communities and provided valuable support during the 2019/20 bushfire season.





## Environmental Quality

**Smart Places increase our sustainability by reducing emissions, resource consumption and environmental impacts.**

### Measurable benefits for our communities

Smart meters allow residents and businesses to track their water and energy usage and be alerted in real-time via smart phones or tablets. By responding to real time alerts, people can save money by reducing water consumption by up to 20 to 30%. The Smart Western City Program Strategic Business Case assumes water use can be reduced by 22.5%, translating directly to water bill savings for customers.

### Achieving this outcome

Smart Places initiatives being developed by the NSW Government and partners should:

- » Provide customers realtime access to information to help them better manage their consumption and resource use.
- » Improve the monitoring and forecasting of environmental conditions, to assist action in real time.
- » Incorporate environmental sensors into new and improved infrastructure assets.
- » Improve the efficiency of resource use and waste generation by using smart initiatives to monitor assets across their whole life and encourage their re-use.
- » Improve and maintain the health of the natural and built environment in Smart Places.
- » Adopt smart solutions to more efficiently use our services and infrastructure to reduce carbon emissions.

### Where this is already being done

Georges River Council's *Cool Places Urban Oasis Program* delivered open-air community ChillOUT hubs at three local parks, rolling out IoT environmental sensors to measure urban heat microclimates, mobile charging stations that integrate with furniture, Wi-Fi access points, and flexible work and rest spaces. The program provided the community places and infrastructure that are people-friendly, increase liveability and combat urban heat island effects.

In 2019, Barangaroo was announced as the first urban precinct in Australia to be awarded carbon neutral status. The carbon neutral certification, awarded by the Commonwealth Government, was achieved by taking three approaches to carbon emissions - 'avoid, reduce, mitigate'. The approach integrates environmentally sustainable measures implemented within each building and across the precinct overall and is supported by smart technology.





## Equity, Accessibility and Inclusion

**Smart Places will improve improve physical and digital access for the people of NSW to participate in economic and civic life.**

### Measurable benefits for our communities

Real-time route planning for vehicles, sensor networks on parking spots and smart traffic signalling can contribute to managing congestion and improve mobility options. Technology like this has been shown to reduce commute times by 15 to 20 per cent, giving people back time in their day. The Smart Western City Program Strategic Business Case assumes people will be able to cut their travel times by 5.5% with smart transport technologies.

### Achieving this outcome

Smart Places initiatives being developed by the NSW Government and partners should:

- » Increase fixed and wireless digital coverage, connectivity and quality across NSW.
- » Use data insights and smart technologies to improve physical and digital accessibility across NSW.
- » Introduce smart solutions to convey the history and culture of the place, including recognition of the traditional owners.
- » Increase community pride, empowerment and cultural bonds to improve social cohesion and social isolation.
- » Increase connected public spaces to allow people to work and study in more places, boosting access to education and income opportunities.
- » Increase participation in local and digital economies of a place.

### Where this is already being done

The NSW Government has committed \$400 million to bring a faster and more reliable digital network to regional NSW. The *Regional Digital Connectivity* program will ensure families and businesses across regional NSW have better access to enjoy mobile, internet and digital services. The program is focused on eliminating mobile black spots where people live and work, bringing metro-level data speeds, connectivity and infrastructure to regional NSW, and supporting agribusiness and agricultural technology.

Barangaroo Ngangamay is a unique and authentic Aboriginal cultural experience, using modern technology to tell ancient stories of the world's oldest living culture. This innovative multimedia artwork is embedded within the iconic Sydney sandstone of Barangaroo Reserve, honours and brings to life the significance of Barangaroo the woman, after whom this part of Sydney's western waterfront is named. Five rock engravings have been hand-carved into five sandstone rocks around Barangaroo Reserve by male Aboriginal Elders using manual hand tools such as stones, mallets and chisels. The engravings act as a key to unlock five short films depicting the life cycles of the sun, moon and women. Each film is accessible to visitors through their smart phone or tablet using a geo-location app, which plays the films when approaching the engravings.



## Health and Well-being

**Smart Places improve the quality of life and well-being for the people of NSW.**

### Measurable benefits for our communities

The NSW Government is assessing smart technology start-ups that monitor and model air quality, climate conditions and other real-time environmental data. These have the potential to reduce health impacts from severe environmental conditions such as extreme heat, poor air quality, and high pollenation events on the most vulnerable members of the community. The Smart Western City Program Strategic Business Case reflects these benefits and assumes smart technologies will help us reduce asthma-related hospital admissions by 5%.

### Achieving this outcome

Smart Places initiatives being developed by the NSW Government and partners should:

- » Integrate smart technology to inform the design and maintenance of shared, bike and pedestrian paths to encourage physical activity.
- » Use smart solutions to make public spaces safe and encourage their use at all times of the day.
- » Improve the ability to provide real time data on environmental risk factors that affect health and well-being of customers.
- » Invest in health data as an asset to inform health education, program delivery and service provision in our healthcare system.
- » Improve digital connectivity to enable the provision health care services in regional and remote locations.
- » Deploy smart technology to make places adaptable to changing community needs.

### Where this is already being done

As part of the Commonwealth Government's *Smart Cities and Suburbs Program*, the City of Sydney rolled out walking sensors across the local government area to collect pedestrian movements at a large scale. Data was made publically available and allowed for evidence-based decisions for future investment to encourage active transport, enhance pedestrian infrastructure, safety improvements, waste collection, city maintenance, late-night activity areas, and event planning.

A new, "virtual hospital" is being trialled in metropolitan Sydney. Patients choosing to enrol have access to 24/7 personalised healthcare in the home. Through a smart device, they can contact a nurse and record and update their health information. Virtual hospitals combine the delivery of community healthcare services with the latest digital healthcare strategies. This new, innovative way of caring - with the patient at the centre - allows local health districts to provide enhanced multidisciplinary services to the community. This has the potential to reduce unnecessary Emergency Department presentations, shorten a patient's length of stay in hospital and empower patients to lead a better quality of life.



## Collaboration and Connection

**Smart Places bring people, businesses and governments, their data and services together in a seamless way.**

### Measurable benefits for our communities

To drive innovation and explore market possibilities - the Smart Western City Program is being co-created with industry through an early market engagement program. Industry were asked to present technological innovation opportunities to improve productivity, sustainability and social outcomes for the Western Parkland City.

114 prospectuses were received in response to a call for ideas, and around 80 organisations participated in market sounding activities and included a pitchfest event which led to a number of test and trials.

### Achieving this outcome

Smart Places initiatives being developed by the NSW Government and partners should:

- » Establish new partnership models for deeper collaboration between partners, Government and communities, enabling services to be joined seamlessly.
- » Provide consistent platforms for data storage and management for appropriate data to be shared openly.
- » Drive adoption of new technologies and approaches by engaging communities early, so the solutions are relevant to the place.
- » Encourage data-driven solutions in partnership with the academic sector and industry.
- » Ensure digitally-enabled environments are adaptable and resilient to future technological change.
- » Ensure quality data is collected from all sources with permission from data owners.

### Where this is already being done

New health care facilities rely heavily on the expert input of clinicians and other health care professionals during design. For the \$740 million Liverpool Health and Academic Precinct, NSW Health Infrastructure piloted a Virtual Reality (VR) experience to enhance the design process. Users accessed interactive VR environments to explore their clinical areas in the design stage, a step-change from the usual technique of reviewing 2D drawings, design data sheets and static 3D images.

Digital Engineering is the convergence of technologies to create a digital model of an infrastructure asset over its entire life. By digitally connecting and integrating the different systems used within each stage, and throughout the life of an infrastructure asset, significant construction and operational costs can be saved. The *Digital Built NSW* program aims to capture these interoperability benefits by rolling this out across the NSW Government's infrastructure program. The program has found that construction costs could be reduced by up to 10% and whole of life asset management costs by up to 5%.

# Implementation Plan

*Foundations, Enablers and Programs are the 'building blocks' that enable the NSW Government and place owners across the State to deliver on Smart Places outcomes in their cities, towns and communities.*

## Foundations – standards and policies

Robust foundations are essential for successful Smart Places, providing a common, stable basis for investment in connected infrastructure and services more broadly.

These foundations are whole-of-government initiatives that support the successful take-up of technology in ways that prevent 'siloed', ad hoc or fragmented decision making, which can stop broader multi-sector benefits from being realised. Foundation actions proposed in the Strategy include:

- » Developing and implementing policies that require interoperability from technology, while ensuring data is secure and technology enabled solutions are trusted by the community
- » Adopting standards for connected infrastructure systems to ensure that NSW buys technology that meets the needs of its citizens, aligns with national and international good practice and facilitates technology enabled ecosystems
- » Developing digital models of places to reduce construction costs and improve planning processes and community engagement, and
- » Providing effective governance to enable data to be shared and analysed to improve decision making and ensuring that NSW Government data assets are properly valued.

## Enablers – partnerships and procurement

The Smart Places foundations will need to be applied consistently across the State. With these foundations in place, resources, collaboration and investment (enablers) are needed to access and use technology effectively and creatively. The most effective enablers for the successful roll-out of a Smart Places Program are likely to be:

- » Collaborative partnerships and sponsorship of programs by place owners (place owners can be NSW Government agencies, property owners or councils), including:

- Creating a central team to work across the NSW Government to maximise benefits of Smart Places delivery and work with place owners and service delivery agencies
  - Establishing a lead role for place owners in setting objectives for Smart Places
  - Provide guidance and resources for local councils on Smart Cities and Smart Places initiatives and procurement
  - Creating ongoing forums to engage with local government, the research and academic sector and industry associations, and
  - Enshrining collaborative arrangements in the new Smart Places program for the design, development and delivery of Smart Places.
- » Effective procurement and commissioning, which includes ensuring that the procurement processes of NSW Government agencies promote and do not stifle innovation, that some processes and regulations governing local government procurement are modernised, and guidelines are development for tailored engagement with the market, and
  - » Funding and financing for initiatives, which includes NSW Government direct investment to establish the foundations for successful Smart Places and investing in place-based programs.

## Programs – places, services and people

The innovative programs that provide the basis for the Smart Places Strategy will be delivered through three streams:

- » New places and communities (Greenfield Programs)
- » Redeveloped and renewed places and precincts (Brownfield Programs)
- » People (Capability development, education and investment attraction programs).

These programs will help ensure the NSW Government considers 'Smart Places' solutions as part of its everyday business through embedding the approach in governance processes, asset management and delivery of essential services.

## Foundations – standards and policy

*Robust foundations are essential for successful Smart Places, providing consistent planning and delivery of connected infrastructure and services across the State.*

In addition to the actions below, the NSW Government is already delivering a suite of policies, standards and digital architecture needed to support Smart Places:

### NSW Internet of Things (IoT) Policy

The IoT Policy applies to all NSW Government agencies and will apply to all relevant Smart Places programs and initiatives. It includes important principles for Smart Places including interoperability, cyber security, competitive and flexible procurement and data-driven decision making.

### Smart Infrastructure Policy

The Smart Infrastructure Policy sets the minimum requirements for smart technology to be embedded in all new and upgraded infrastructure from 2020. The Smart Infrastructure Policy applies to all new NSW Government capital and ICT projects subject to the Investor Assurance Framework (IAF) and the ICT Assurance Framework. These assurance frameworks will also play a key role in the development of Smart Places.

### NSW Cyber Security Policy

The NSW Cyber Security Policy outlines the mandatory requirements to which all NSW Government Departments and Public Service Agencies must adhere, to ensure cyber security risks to their information and systems are managed. The policy applies to all Smart Places initiatives and programs.

### NSW Digital Twin

Digital twins layer digital engineering models, IoT sensor data, and environmental data into a digital model of the built and natural environment. The NSW Government is using these, starting with a pilot in the Western Parkland City, to gain a deeper understanding of places – informing policy, planning, development, construction and maintenance and operational decisions.

Summary of actions	Lead	Timeline
<b>1</b> Develop a Data Protection Policy to supplement the <i>Privacy and Personal Information Protection Act 1998</i> , to guide how data is collected, managed and stored as part of Smart Places implementation.	Department of Customer Service	Complete within 12 months
<b>2</b> Publish a customer charter for Smart Places including a commitment by the NSW Government and its agencies to adhere to the Data Protection Policy and legislation.	Department of Planning, Industry and Environment	Progress within 6 months
<b>3</b> Support the development of a standards approach to promote safe, secure and competitive technology solutions.	Department of Planning, Industry and Environment with Chief Data Scientist	Progress within 18 months
<b>4</b> Develop a Digital Built NSW Program and pilot key elements of this in the Western Parkland City as part of the Smart Western City Program (see Action 10).	Infrastructure NSW	Progress within 18 months
<b>5</b> Develop guidelines to support agencies to invest in data as an asset, and to use data to inform investment decisions.	Department of Customer Service	Complete within 18 months
<b>6</b> Develop a guide to assist place owners and precinct planners design smart places.	Department of Planning, Industry and Environment	Complete within 18 months

## Enablers – partnerships and procurement

*Building upon the foundations, enablers - place, resources, collaboration and investment - are needed to access and use technology effectively and creatively.*

Summary of actions	Lead	Timeline
<p><b>7</b> Continue to reform procurement and commissioning approaches:</p> <ul style="list-style-type: none"> <li>» to better enable local councils to procure smart solutions</li> <li>» to enable Government to better partner with start-ups, foster innovation and build innovation eco-systems.</li> </ul>	<p>Department of Planning, Industry and Environment and Department of Customer Service</p>	<p>Initial fund to be established within six months</p> <p>New funding and financing models to be tested and trialled within 18 months</p>
<p><b>8</b> Establish a Smart Places Acceleration Fund to allow the NSW Government to partner with Local Government and place-owners to accelerate the development of Smart Places.</p> <p>Use existing programs to identify funding and financing models to maximise the value of Smart Places, mitigate risks and support innovation and start-ups in NSW.</p>	<p>Department of Planning, Industry and Environment and Department of Customer Service</p>	<p>Initial fund to be established within six months</p> <p>New funding and financing models to be tested and trialled within 18 months</p>
<p><b>9</b> Support and attract world-leading investment in Smart Places and nurture local start-ups and scale ups, including leveraging start-up support programs operated by NSW Treasury.</p> <p>Support smart place investment opportunities and implementation for Lighthouse Precincts including the Sydney Innovation &amp; Technology Precinct and the Westmead Health and Innovation District.</p>	<p>Department of Planning, Industry and Environment and Department of Customer Services in partnership with NSW Treasury (including Western City and Aerotropolis Authority)</p>	<p>Progress within 18 months</p>

## Programs – places, services and people

*These programs will help ensure the NSW Government considers ‘Smart Places’ solutions as part of its everyday business through embedding the approach in governance processes, asset management and delivery of essential services.*

Summary of actions	Lead	Timeline
<b>10</b> Invest in Smart Places programs to build in connected technology and infrastructure in new communities and precincts starting with the Smart Western City Program.	Department of Planning, Industry and Environment and Western City and Aerotropolis Authority	Develop Smart Western City Programs within 12 months
<b>11</b> Invest in smart solutions in Special Activation Precincts as part of their ongoing delivery.	Department of Planning, Industry and Environment and Regional Growth NSW Development Corporation	Ongoing
<b>12</b> Invest in Smart Places programs to build in connected technology and infrastructure in areas undergoing large scale redevelopment or renewal, starting with: <ul style="list-style-type: none"> <li>» Greater Parramatta and Olympic Peninsula</li> <li>» Regional Centres where improved connectivity is being deployed as part of the NSW Government’s Regional Digital Connectivity program</li> <li>» Innovation Precincts.</li> </ul>	Department of Planning, Industry and Environment and relevant place owners	Greater Parramatta Smart Cities Plan to be delivered in 2020-21  Pilot plan for Smart Regional Places to be delivered in 2020-21  Progress smart planning for Innovation Precincts within 12 months
<b>13</b> Invest in skills development that will assist Smart Places implementation, in line with Beyond Digital, the NSW Customer and Digital Strategy and the Premier’s Priority for a World Class Public Service.	Department of Planning, Industry and Environment and Public Service Commission	Progress within 12 months
<b>14</b> Ensure all infrastructure reconstruction and improvement proposals as part of the 2019-20 Bushfires are ‘smart by design’.	All affected NSW Government agencies	Underway from January 2020



