

# Information and Technology Strategy



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**Cover image:** Sydney city at night with technology theme overlay depicting a connected city – Photo by Abril Felman / City of Sydney

# Summary

This strategy outlines how the City of Sydney plans to develop and use information and technology services over the next 4 years.

It responds to growing community, client, and workforce expectations that life and work tasks can be performed digitally at any time and from anywhere.

Our local businesses are rapidly embracing new capabilities into their service delivery models. And our residents and visitors are changing how they use online services and interact socially. As a local government agency, we need to meet these expectations, make the most of new technologies and make the right services easily available.

With the ever-growing presence of technology, we also need to ensure the right controls are in place for privacy, security, and the ethical management of personal information.

This strategy forms part of the City of Sydney's Resourcing Strategy and aligns with our community strategic plan, Delivering Sustainable Sydney 2030–2050.

This strategy does not describe our work on influencing the digital economy of Sydney and enhancing the digital literacy and inclusion of our communities – that work is detailed in other City of Sydney documents, including the community strategic plan. Our previous information and technology strategy in 2017 set the foundations for a new generation of service delivery systems and best practice management and governance of technology, information and data.

This strategy builds on our earlier work and sets actions that will transform our capability in digitalised services and the use of data and information. It sets these out in 3 key areas of focus.

## **Focus area 1:** Developing community centric services

Our community expects a high standard for digital services. In the next 4 years we will increase the range and quality of our digital services and ensure a consistent and connected experience across our services. We will extend our digital channels to make it easier for our community to provide comments, share ideas and take part in consultation activities. We will also increase community access to digital equipment.

## **Focus area 2:** Managing information and data for public good

Information and data present enormous opportunity for community and societal benefit. In the next 4 years we will continue to improve data quality, governance, management, and record keeping. We will publish open data to the City of Sydney's data hub and develop a document publishing hub that facilitates easier access to information.

## **Focus area 3:** Optimising technology and communications infrastructure for service delivery

Digital systems and their supporting networks have become a core local government capability – they are essential resources and tools to run the City of Sydney's operations. We will review how we manage our foundational systems and technology to support changing business requirements, further improve cyber security and monitor advances in emerging and sensing technologies for our assets and services. We will also collaborate with stakeholders developing the Tech Central precinct to optimise placement and access to digital infrastructure.

# Developing community focused services

Our residents, business and communities are at the centre of our work to transform the City of Sydney's digital services.

The digital systems and processes in local government have traditionally been property centric, focused on managing land, planning, property, public infrastructure and associated regulatory services. While this work remains a core responsibility, this strategy reframes digital services by placing the needs of our communities – our residents, businesses, and the other agencies we interact with, first.

Our new service systems will integrate how we manage incoming service requests across all areas of service delivery. For example, if a community member chooses to email us about a topic, make a follow up phone call, and message us on social media, we will be better able to coordinate these points of contact and our response.

We also want to move a majority of our information and transactional services onto digital channels to make doing business with us faster, simpler, more personalised and accessible.

This will allow our communities to interact with us easily and in real time, see the relevance in the services and information we provide, receive timely alerts and notifications, and have better mechanisms to give feedback on our services.

## Current trends that have influenced this strategy

### **Our community expects a high standard for digital services**

Community expectations for digital services have escalated in the last decade. We have seen rapid digital services development in e-health, e-commerce, remote learning, entertainment, the arts, social services, and events. These expectations have been amplified by the Covid-19 pandemic.

The Greater Sydney Commission reports:

**“A 700% increase in telehealth services and large-scale increases in collaborative work and social platforms since the pandemic was declared and a 300% increase in library e-loans illustrate how the pandemic is accelerating the digitisation of all areas of life. Over the last 10 years the proportion of households in NSW with access to the internet increased from around 70% to around 85% across all categories of households”.**

(Source: Greater Sydney Commission, 2020, City-shaping impacts of COVID-19)

People's food and shopping decisions are also more likely to be digital. Around 82% of Australian households shopped online in 2020 and total purchases were higher by 48.5% on 2019 levels. (Source: Inside Australian Online Shopping eCommerce update, December 2021)

### **Expectations of clear and consistent government communications are growing**

In 2019 the City of Sydney's research into customer service needs identified that across all age groups, between 68% to 81% of our communities wanted to access our services all in one place online.

Our communities expect us to provide information upfront and once only, minimise unnecessary interactions with them, protect their personal and transactional data, and keep them informed to a level they choose, and in a communications style they prefer.

They want connected services that meet their needs and account for the context of their interests and circumstances. For example, the range of connected services needed for a life event like moving house, or for a stage of life such as children needing childcare and holiday activities, or for entertainment.

They also want rapid end-to-end transactions. These include being able to book, pay and receive a receipt in real time, and access to high-quality automated chat assistance to provide general and transaction-specific information.

Customer experience (CX) has grown as an industry and practice in the business sector over the past decade. And people now expect similar business grade services from government agencies. The NSW Government has made substantial progress toward this goal, making connected services accessible through the Service NSW online portal.

The City of Sydney also needs to provide responsive digital services that are easy to access and use, and to a quality that matches or exceeds people's everyday experiences and expectations.

### **Our digital channels are designed to support equity and inclusion**

The City of Sydney targets WCAG 2.1 AA accessibility standards as the preferred standard for our digital properties and we work to influence third party providers to meet this benchmark.

Our digital channels will support equity and inclusion, reaching more people more quickly and easily than in-person services. Language accessibility and translation services are becoming increasingly viable.

We are using insights on how people respond to our digital services to learn more about needs and preferences and better target these services over time.

We also know that some people will require or prefer in person or phone services. As more transactions and general enquiries are fulfilled through online services, we will be able to free up capacity to help people with more complex needs.

During the Covid-19 pandemic, we gained stronger insights into the need for public access to the information technology available in our libraries and community centres. Access to digital equipment remains an issue for some members of our community.

### **Our role is to provide a connected end-to-end digital journey**

The City of Sydney serves residents, businesses, visitors, and partners through multiple separate systems. Examples include systems for planning and property management, rates, waste management and direct community services.

However, interacting with disparate systems can provide an inefficient and fragmented experience with respect to contemporary expectations.

We aim to create an end-to-end journey that seamlessly draws from different business systems for easier interactions. This will require integrating our internal systems and processes to enable consistent and appropriate communications and build lasting relationships with our community members.

Centralised governance supports these efforts setting standards, streamlining operations, and providing a coherent strategic direction.



### **Artificial intelligence technologies help enable responsive connected digital journey**

Our communities expect a personally customised experience as they interact with our digital channels. Artificial intelligence algorithms can help deliver this experience by using previous interactions to tailor predictive search, to power the virtual assistant and other navigations to quickly guide community members to the digital services they want, automate manual processes and data capture, and support improved real-time decision-making processes.

The City of Sydney will approach the use of this key enabler ethically, taking care to ensure our algorithms are free of biases that may generate poor or unwanted outcomes.

### **Open banking and payment options are diversifying**

With the increasing use of digital wallets and services such as PayPal, and in the context of the recent pandemic, people expect contactless payment processing options.

There has also been substantial growth in banking, payments and financial data accessibility standards that has changed the provider and consumer landscape.

The City of Sydney needs to monitor these developments and continue to integrate diversified payment methods into our digital services.

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## Strategic statements

The City of Sydney will plan and develop responsive digital services that are easy to access and use, robust, always available, and at a level that matches our users' experience of digital products and services in everyday life.

We will use human-centred service design principles, involving co-creation and testing with users during the design and development

stages of our digital products and services. This will help ensure our services match our communities' needs, are easy to use and are informed by a diverse set of perspectives.

We will apply design and development standards and techniques to ensure our products and services are accessible and inclusive.

Third party systems will provide detailed transaction processing and data storage.

We will plan, design and execute integrations between systems to create a consistent and connected experience.

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## Priority actions

- Design and build a new, improved and richly featured customer portal and services layer (CityConnect).
- Progressively increase the range of digital services, using human-centred design practices, including co-design, and testing with our communities.
- Revise, redevelop and extend our digital channels for community engagement and consultation.
- Develop new and improved channels for booking and use of community facilities.
- Increase community access to digital equipment through focussed extensions to our public access to technology program and through partnerships with other providers in social services sector.
- Invest in integrations between systems to ensure a consistent and connected experience across our services.
- Extend our customer relationship management (CRM) solution to ensure technology works seamlessly for our communities across any channel.

*“Living in Sydney,  
there’s so much ‘life  
admin’, it would be  
easier if I could get  
it all done all in one  
place.”*

*- City of Sydney Research, 2019*



**Figure 1.** Person using mobile device on a bench in Hyde Park – Photo by Mark Metcalfe/City of Sydney

# Managing information and data for public good

Information and data are arguably the longest lasting assets of any organisation – underpinning all the City of Sydney manages and does.

The ever-increasing volume of information and data created in the digital economy present huge opportunities for community and societal benefit, but also presents considerable risks.

We need to protect information and data to ensure privacy and confidentiality, long term access to records, and preserve history for future generations.

We manage information and data in line with: *State Records Act 1998 (NSW)*; *Government Information (Public Access) Act 2009 (NSW)*; *Privacy and Personal Information Protection Act 1998 (NSW)*; and *Health Records and Information Privacy Act 2002 (NSW)*.

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## Trends that have influenced this strategy

### **Data protection and ethics have become mainstream**

Australia has long been at the vanguard of privacy, confidentiality, and data ethics. Strong privacy legislation is administered and monitored by federal and state bodies.

The City of Sydney has high standards in privacy, confidentiality, security, ethical use, and record keeping. But we need to continuously improve and remain vigilant.

At a time of exponential growth in information and data, we need to keep the principles of informed consent and data minimisation front of mind.

### **Providing public access to information and data remains essential**

Openness and transparency are the cornerstones of public sector institutions, promoting good governance, accountability, and high levels of community participation and trust. Openness also facilitates opportunities for innovation.

As a NSW public sector organisation, we must comply with the Government Information (Public Access) Act 2009. This law is overseen and monitored by the NSW Information and Privacy Commission, which has a mandate to contribute to social and economic wellbeing in NSW by leading effective information access and privacy.

The City of Sydney has robust practices in place to comply with this Act. These practices need to keep pace with changing community needs and expectations, with more information and data being published under our proactive disclosure program.



### **Growth in big data and analytics will change how we interact with our city**

Around 90% of all data in existence today was created in the past 2 years. By 2025 worldwide data is projected to reach 175 zettabytes, of which 80% will be unstructured data (video, images, sound, and documents). An estimated 90 zettabytes will be from sensors.

The astonishing growth in data and advances in technology have driven growth in data science and analytics – the application of machine learning and artificial intelligence to predict the future and help prescribe the best course of action.

Spatial intelligence and data are particularly important for local governments as it provides insights on how people interact with the built form – telling us what is working well and where improvements can be made.

Digital twins – a near-time model of a space, building, or even city – is an emerging trend underpinned by spatial data exchange, Internet of Things sensors, and spatial intelligence analytics. It has the potential to fundamentally change the way we understand, plan, and manage our area. When combined with virtual and augmented reality, the way we experience the City of Sydney area is also open to fundamental change.

### **Strategic statements**

The City of Sydney will ethically manage personal and confidential information to prevent harm to people and organisations.

We will provide and promote equitable public access to City of Sydney information and data to meet the spirit and requirements of the *Government Information (Public Access) Act 2009*.

We will contribute to the information economy to foster innovation.

We will manage data in line with record keeping and archival requirements to ensure defensible business decisions and preserve history for future generations.

We will optimise the volume of physical and digital information and data to be managed and stored to ensure continued compliance with legislation, minimise costs, and reduce environmental impacts.

We will provide business and spatial intelligence for better planning, operations, and decision making.



**Figure 2.** Building data analytics capabilities - Sydney harbour skyline – Photo by Abril Felman / City of Sydney

## Priority actions

- Establish data stewardship across the City of Sydney with a focus on data privacy, confidentiality, security, ethics, quality, and sharing.
- Engage with academia, industry, and communities about our data hub and our archives and history resources catalogue to inform, engage, educate, and improve services to the community and encourage innovation.
- Develop a document publishing hub that complements the City's data hub and facilitates easier access to information.
- Digitise business processes and improve data quality, data sharing, and records management.
- Deliver business and spatial intelligence and analytics solutions that provide actionable insights for improved planning, operations, and decision making.
- Digitise physical information for improved access to information, compliance with record keeping legislation, reduced storage, and management costs, and reduced environmental footprint.
- Educate the City of Sydney's workforce in information access, information and data governance and management, and business intelligence.

# Optimising technology and communications infrastructure

Local governments now rely on digital and communications technologies as essential infrastructure for their services. Even services that are provided face to face or involve the planning, management, and maintenance of the physical aspects of the city and public domain rely on digital systems and technologies for planning and administration. Without reliable, fit for purpose technology the City's business continuity is at risk.

This dependence on technology to provide core local government services means we need longer term planning and appropriate investment. We also need strong capabilities to achieve the necessary standards, reliability, and security of services that support Sustainable Sydney 2030–2050 business outcomes.

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## Trends that have influenced this strategy

### **Digital systems and their supporting networks have become a core capability for resilient service delivery**

We depend upon an increasing asset base to provide our services digitally. This has implications for funding and investment and managing this asset base to ensure digital services are secure, integrated and continually available.

The 3 main classes of technology assets are:

- public facing service channels, information display and data collection interfaces
- internal administration and operational systems to complete transactions and store the associated data and records
- digital infrastructure including data storage, networks, cabling and switching devices.

The City of Sydney uses a mix of vendor provided products and systems spanning these asset classes. Our employees are responsible for ensuring daily availability and continuity of the technology services, for constructing integrations between systems and for assurance of vendor deliverables.

Sufficient budget is required to ensure appropriate lifecycle management of these classes of asset, including project work for major uplift and renewal, and funded programs for management and maintenance.

Planning and managing these assets also requires a skilled workforce with capability in a range of electrical engineering specialisations including infrastructure, networking, applications development and integration, cyber security, and end user computing. The City of Sydney must attract and retain a sufficiently skilled engineering workforce to effectively manage this critical and complex set of assets and providers.

The associated resource requirements are recognised in our long-term financial plan and our people strategy.

### **Working digitally has become mainstream**

In the past 2 years our expectations and capabilities to work digitally have escalated rapidly and with this our ways of working have changed. Our workforce has become more digitally adept, adopting new tools and techniques for working effectively remotely but together and for collaborating and sharing knowledge, documents and workloads.

This shift means that we have an increased need for up to date, high performance, well secured end user device fleet and an operating environment to support our employees to work digitally.

### **Australian local government systems are highly customised and a long-term asset class**

Local government services are delivered within a web of organisational and administrative arrangements. In Australia there are variations in the range of services and regulatory requirements in each state, and variation between regional and urban areas.

Local government business systems are thus highly configured and customised to meet local scope and regulations – they are bespoke and not easy to change or replace. This adds cost and limits the City of Sydney's choices.

In the scale of all business, local government is a very small sector. The vendors servicing the Australian local government market are few and are also challenged with keeping pace with consumer quality expectations.

The City of Sydney acknowledges these constraints and aims to optimise its investment in these complex long-term underpinning systems.

### **We also need to integrate with the broader government ecosystem**

There is a growing interdependency between the digital systems and services at state and local government levels and this increases the complexity of the digital systems we manage.

The NSW Government, through agencies such as Service NSW and Department of Planning and Environment, also seeks to provide connected, consistent, and accessible digital services. It has developed new services in land use, strategic planning, development, lodgement and assessment, and a range of

data transfers for building certification. Further developments are in progress or planned.

The City of Sydney will liaise with relevant agencies to understand their digital development plans and roadmaps, and this will inform our technology management and resource planning.

### **Service hosting options require periodic and in-context assessment**

There are 3 main hosting and management options for the systems and technology deployed by any organisation to deliver its services.

Pure "cloud services" are standardised services that are owned, developed, and managed by others. These are accessed with a subscription fee.

Vendor hosted services are where the provider establishes a customised system and operating environment for specific use by an organisation over an internet connection. The provider manages availability and periodic upgrades for that specific environment.

On-premises management is where a product or service is installed in the organisation's data centre under licence, and its availability, operating environment and upgrades are managed by the organisation.

The City of Sydney will continue to use a mix of all 3 service provision methods to provide a resilient and available service. The methods selected for a service depend upon several factors including product maturity, our needs for data storage, security considerations, comparative costs between methods, and needs for integration with other City of Sydney systems and services.

Many providers of generic platforms and common enterprise processes, such as collaboration platforms and tools, financial and human capital management systems, have transitioned to offer their products via cloud services. Consuming these services via subscription, transfers the cost of digital technology from a capital expenditure to an operational expenditure and this needs to be factored into long term financial planning.



### **Emerging technologies and methods require ongoing assessment**

Many industry sectors are incorporating innovative capabilities such as augmented and virtual reality, blockchain, digital twins, quantum computing and robotics into their business operations. The City of Sydney maintains awareness of the application of these technologies, to assess their beneficial applicability in relation to our business needs. Key areas include the use of augmented reality for visualisation of proposed changes in the built environment and public domain, and digital twin capabilities for modelling, mapping, and managing assets, buildings, and landform.

### **Digital infrastructure in the urban realm requires greater planning and management**

Modern global cities increasingly rely on digital infrastructure for effective and efficient operations. The data and alerts generated from sensing technologies such as cameras, probes, and meters, can potentially assist many aspects of city planning and operations. Candidate areas include kerbside management, pedestrian flow, lighting management, waste management and resource recovery, water management in relation to consumption, quality and reuse, environmental condition sensing, safety management, and building management.

Sensing technologies need access to reliable network connections, adequate computational processing power and sufficient network bandwidth to efficiently transmit data.

For example, sensors that report on the state of a service, such as water flow speed, or air quality, typically log and report small volumes of data periodically. Devices that manage traffic flow must assess large volumes of data in real-time and need a large bandwidth and/or computational processing (edge computing) close to the sensor.

These technologies require extensive planning and management that consider these factors:

- **Forward planning:** anything designed in the urban setting involves long-term planning

- **Cost management:** the cost of retrofitting technologies is far greater than designing into initial construction or planned major refurbishments. Ongoing cost of maintenance and renewal needs to be built into asset management plans
- **Jurisdiction:** who has primary responsibility for the asset. In Australia, many sensing technologies are managed by other government agencies such as transport, police and emergency services, and through everyday life such as cars, building management systems, home management systems and smartphones. These rely on our telecommunication network carriers
- **Data sources and services:** Many data aggregators already collect data from a range of sources, which can be alternate data sources for city services planning and management
- **Ethical use of data:** data from sensing technologies and third-party services must comply with privacy principles
- **Security:** data from sensing technologies must be protected from intentional and unintentional compromise in terms of its veracity and availability
- **Network density:** migration from prevalent 4G to forward network protocols including 5G, Wi-Fi and LoRaWan are increasing the density of street level equipment
- **Aesthetics and public amenity:** good planning and design is required to ensure sensing technologies and the networks they rely on do not degrade amenity in the public domain.

Our focus will be to establish policies and initiatives that encourage the business community, service delivery partners and the City of Sydney to adopt and expand infrastructure that contributes to our Sustainable Sydney 2030-2050 vision.

Collaboration and partnerships with these groups will be critical to establishing the foundation for emerging and as yet, unknown capabilities across the city.



**Figure 3.** Securing digital services – Sydney Tower and skyline - photo by Abril Felman / City of Sydney

### Cyber security issues are escalating

The threat and volume of cyber security incursions in all areas of life and business has escalated dramatically.

The Australian Cyber Security Centre reports cybercrime increased by 13% and ransomware reports by 15% during 2021. Risk increases as our community users continue to embrace digital channels and workers work remotely.

The City of Sydney has a strong foundation of policies, processes, and controls to protect our technology assets and services from both intentional and unintentional compromise. A strong focus on cyber security protections will continue to be integral to our technology planning and management.

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## Strategic statements

The City of Sydney will continue to plan and maintain 4-year and 10-year outlooks for best practice lifecycle management of information and technology assets to ensure continuity of services, transition to digital channels, integrated efficient systems and effective digital working.

We will define, attract, and retain a sufficiently skilled workforce to plan, manage, assure, and maintain our digital services, systems, and infrastructure.

We will prioritise the deployment and continual upgrade of sufficiently performing network and end user devices that enable our workforce to work digitally.

We will continue to periodically assess the most appropriate hosting environment (cloud, hosted, or on premises) for our business systems and collaboration platforms to inform our project roadmaps, and also at inflexion points when we procure new products or upgrade existing facilities.

We will liaise with relevant government agencies to understand their roadmaps for digital development as inputs to our technology and resource planning.

We will optimise investment in our long-term foundational systems through effective configuration and integrations.

We will continue to monitor and advise on emerging technologies and their communications networks to assess their benefits and ensure appropriate installations in the public domain.

We will collaborate with relevant owners, regulators, and operators of infrastructure for water, energy, transport, and communications who are delivering projects for development and installation of digital infrastructure.

We will continue to extend our cyber security capability to align to industry best practice guidance, including recommendations from the Australian Centre for Cyber Security (ACSC) and with reference to other key international frameworks such as National Institute for Standards & Technology (NIST) Cyber Security Framework and ISO27001 – Information Security Standard.

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### Priority actions

- Mature our enterprise architecture practice to govern the design and development of technology services and support the effective coordination and integration of internal and external components.
- Review and renew data centre services to respond to changing requirements for key city business systems and further strengthen the environmental performance of our infrastructure and end-user devices.
- Increasingly advocate for effective regulations to balance the interests of the public domain with the requirements for increased density of communications infrastructure.
- Monitor advances in emerging technologies, including sensors, and how they can help in the planning and management of our assets and services.
- Increase focus on reducing risks relating to vendor provided systems.
- Respond to revisions of Australian Cyber Security Centre guidance to identify any adjustments required in our approaches and programs.
- Review and confirm the long-term plan of management for our core local government business systems of record.
- Collaborate with stakeholders developing projects within the Tech Central precinct, to ensure optimised siting and access to digital infrastructure.



# Governance, management and risk

As an integrated part of the City of Sydney Resourcing Strategy, the Information and Technology Strategy guides a sustained course of action in a rapidly and ever-changing environment.

Over the term of this strategy, technology platforms and business systems that were once desirable for service delivery and business operations, will become primary channels. This means they must be treated as core and critical assets that are continuously managed through a lifecycle of planning, development or acquisition, maintenance and uplift, and/or replacement and retirement.

Governance systems need to keep pace with this change, including systems for ethics and security. We need a strong ethical framework to protect privacy and secure data. Maintaining our critical technology infrastructure to prevent cyberattacks is crucial.

The City of Sydney's executive and its budget and project management processes provide oversight of the direction and delivery of information and technology planning, service delivery and projects. They also consider and guide information and technology risk management and ensure ongoing alignment with organisational strategic priorities.

The Information Protection Coordination Group provides advice and assistance across the City of Sydney on privacy, information security, data governance, records management, and ethics.

Service delivery and performance outcomes are included in the City of Sydney's planning hierarchy of annual operational plans and 4-year delivery program, with regular progress reporting in place.

Information technology risk and audit assessments are done periodically and reported through our audit, risk and compliance committee. The City of Sydney's annual financial audit process has a strong focus on assessing the related technology and systems controls related to financial outcomes. This audit is completed by the Audit Office of NSW and reported to NSW Parliament.



**Figure 4.** Information on the go - Sydney Town Hall clock – Photo by Abril Felman / City of Sydney



